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WASHINGTON, D.C.

A N
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O N T H E
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O f p r e s e r v i n g t h e
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I n t h e R O Y A L N A V Y.

C O N T A I N I N G,
C A U T I O N S n e c e s s a r y f o r t h o s e w h o r e s i d e
i n, o r v i s i t, u n h e a l t h y S i t u a t i o n s ;
W I T H
D I R E C T I O N S, p r o p e r f o r t h e S e c u r i t y o f a l l
s u c h, a s a t t e n d s i c k P e r s o n s i n F e v e r s.

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o f D i s e a s e s i n h o t C l i m a t e s.

By J A M E S L I N D, M. D.
F E L L O W o f t h e R O Y A L C O L L E G E o f P H Y S I C I A N S
i n E D I N B U R G H.

Principiis Obst.

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To the Honourable

GEORGE EDGCUMBE, Esq;

S I R,

I Beg Leave to prefix your Name, as the most proper Introduction to this *ESSAY*, by exhibiting a Pattern of that humane Disposition, which is requisite to put in Practice the Rules contained in the following Pages.—A Disposition, not less honourable to yourself, than beneficial to the Public; and which, added to many other amiable Qualities, render you esteemed by your

A 3 Officers,

Officers, beloved by your Men,
and respected by all, who feel the
happy Influence of your Com-
mand.

That, in the Royal Navy, so
laudable an Example, may become
the Object of universal Imitation, is
the sincere Wish of,

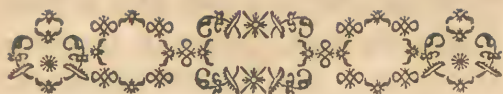
S I R,

Your most obedient,

and very humble Servant,


JAMES LIND.

T H E



T H E

P R E F A C E.

 N Times of public Tranquility, when only smaller Ships of War are employed, and manned with found and seasoned Sailors, their Cruises or Voyages short, and sufficient Opportunity allowed, to refresh in Harbour, the Seamen in his Majesty's Service are in general,
A 4 healthy.

healthy.—A Ship of fifty or sixty Guns, commonly buries as few Men in three Years, as most Villages in *England*, containing a like Number of Inhabitants, except in a few accidental Cases ; as when a Ship upon the Coast of *Guinea*, or the *West-Indies*, suffers by any extraordinary Efforts of Sickness, derived from Causes, hereafter specified.

But Circumstances widely differ, in the turbulent State of War, or when any Emergency, requires the immediate Equipment of a large Fleet, and renders the impressing of Men; absolutely necessary. Then it is, that Sailors, returning with exhausted Constitutions, from long and sickly Voyages in the Merchant's Service, Persons unaccustomed to a marine Life, as well as many naked and diseased Objects, dragged
from

from the Streets and swept from the Prisons, are promiscuously sent on board. —Hence various Occasions of Sickneſs in a Ship: of which, the Infection received from Men lately diſeaſed, or from the tainted Rags of Jails, is none of the leaſt.

Too cloſe Confinement in the damp and foul Air of large Ships, Diſcontent, and the requiſite Duty of the Service, may alſo create Diſeaſes. The Intercourſe of different Ships, ſerves often to propagate them by Contagion; eſpecially when the Removal of the Sick on ſhore, may be deemed inconvenient, on Account of the Danger of their Deſertion. — Thus it is, that many Diſtempers which, in a well-aired City or Village, would affect only a few Individuals, may, in ſuch Patients, and from their peculiar Situation in a Ship,

A 5

acquire

acquire a high Degree of Virulence, and put on a contagious Disposition.

All, acknowledge the Train of Diseases, to which, from the Mechanism of our Body, and the Irregularities of Life, we are necessarily subject. And it is as manifest, that many more are produced, by supervening external Causes. Thus, a quick Transition to a new Way of Life, sudden Changes of Climates, the various Inconveniences and Hardships peculiar to Mariners, plainly account for many of their Diseases. Nor, is it to be doubted, but that proper Methods and Precautions, might be taken, to prepare and inure the Body, to bear such sensible Alterations, as are apt to affect the Constitution; and that by removing, or guarding against other Causes of Sicknefs, to which Sailors are exposed, the Health and Lives of many of

of them, who are extremely negligent in this Point, might be happily preserved.

It may be worth observing, that the prophylactic or preventative Branch of medical Science, does, in many Instances, admit of as much, or even more Certainty, than the curative Part. For it would be easy to demonstrate, that the Rules, for the Preservation of Health and Life, in many singular and dangerous Situations, are founded on clear and self-evident Principles. They are often the natural Dictates of Sense and Appetite, approved by Reason, and established by Observation. The Advantages also, resulting from such like salutary Precepts, are superior to any other; as the nauseous Dose, is here avoided or abridged, and, as a Medicine, which effectually prevents, deserves

to

to be more esteemed than that, which removes a Fever.—Diseases, precarious in their Event, though at last cured, impair the Constitution, render it liable to Relapses, or other consequent Attacks; and, the Patient is necessarily afflicted for a Time, with Infirmary and Languor.

With Regard to the Royal Navy; when the Men are preserved in Health, by proper Management; Courage and Activity, are the certain Consequences.

To a Crew replete in Health, what Enterprize too dangerous? What Achievement too great? Whereas, a sickly Ship's Company, impotent and dispirited, have frustrated many a well-concerted Expedition, and that Bravery, which the Enemies of our Country have not been able to vanquish, has fallen a Sacrifice

crifice to the cruel Ravage of devouring Disease.

An additional Motive to excite the public Attention to this important Subject, (the Preservation of the Health of our Seamen) is the considerable Savings, which will thereby be made, in the immense Sums expended by the Government, in the Article of Hospitals, and the various Necessaries, which are there so amply provided for them.

If then it shall appear probable, that by observing a few easy and practicable Rules here delivered, the Health and Lives of many of our Sailors may be preserved, I flatter myself, that this *Essay*, will meet with a favourable Reception. And it is no small Pleasure to me upon this Occasion, to address the Commanders of His Majesty's Ships of War ;

War ; as I know many of them, who are no less distinguished by their Valour, than by their compassionate Care for their Men.

It gives me no little Satisfaction to observe, that, since the ensuing Sheets were sent to the Press, the Government has purposed to introduce in the Royal Navy, an Allowance of portable Soup ; an Institution, on which the Service may be truly congratulated ; nor, is it less laudable, than advantageous to the Public, and deserving from our Seamen, the warmest Gratitude.

Common Humanity, indeed, ever pleads for the Afflicted, and calls for the Assistance of all, whose Abilities or Observations, are capable of rescuing their Fellow-Creatures from Pain, and the many direful Attendants of Disease.

But,

But, surely, there are no Lives more valuable to the State, or have a better Claim to its Care, than those of the *British* Sailors, to whom this Nation, comparatively owes, its Riches, Protection, and Liberties.

I have nothing farther to premise, than what is here proposed, is chiefly founded upon Experience, and is the Result of an Attention to the Diseases, more peculiarly incident to the Royal Navy.

In an Affair so highly interesting, as the Lives of many of my Fellow Subjects, I shall often take Notice of Circumstances, which may be deemed too minute. But be it not forgot, that upon due Observance to many such Circumstances, Matters of Consequence will depend. Preservatives from Sickness,
ought

ought, as little as possible, to consist in Medicines, but rather in such general Precepts, as all may easily obey. A few present seeming Inconveniencies, attending the Rules recommended, may be abundantly compensated, by future Benefits. And I make no doubt, but Time and Use, will reconcile the Men to some Things in these Sheets, if approved, which bear the Face of Novelty.

Not any thing, I am afraid, has contributed more to the great Sickness of late in our Fleet, than too strict an Attachment to old Regulations and Customs. Some new Regulations are plainly wanted. But as there is no universal Medicine to be found in Nature for all Diseases, so neither is there any one particular Method, much less any single Medicine, which can afford an effectual
and

and universal Protection, against the various Maladies of Seamen.

The Means, here to be proposed, for preserving the Health of a Ship's Company, are two-fold : and consist ;

First, in the Methods proper to prevent the Generation of Sickness in a Ship.

Secondly, in certain Precautions, to stop the Spreading of contagious Diseases, when bred.





THE
T A B L E
O F
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III.





A N


E S S A Y

O N T H E

Most effectual Means of preserving
the HEALTH of SEAMEN in the
ROYAL NAVY.

S E C T. I.

Of preventing the breeding of Sickness.

 N the Equipment of a Fleet there
are two Sorts of Men from whom
Sickness may be apprehended, *viz.*
Sailors imprest after a long Voyage
from the *East or West Indies*, or the Coast of
Guinea; and such idle Fellows as are picked
from the Streets or the Prisons.

The former are often deeply tainted with
scorbutic and other Disorders, which usually
B break

break out upon a longer Confinement and Fatigue at Sea. The Constitutions might, in this Case, by proper Care, be surprisngly soon restored, and the Men duly prepared for another Voyage.

From the latter Set of Men, there is Danger of communicating Infection to the whole Fleet. That there is a Disease of the most contagious Nature, the Produce of Filth, Poverty, and a polluted Air, which subsists always in a greater or less Degree in crowded Prisons ; and in all nasty, low, damp, unventilated Habitations loaded with putrid animal Steams, is now well known, and has been too often fatally experienced, by taking such contaminated Persons into our Ships.

With Deference then to better qualified Judges, I would beg Leave to suggest, that the proper Method to be taken to secure the future Health of the imprest Sailors, and to obviate the Mischiefs which might accrue from diseased Landmen, seems to be this.

In the usual Descriptions of imprest Men taken by the regulating Captains, it would be proper to insert their former Way of Life, the Place of their late Residence, the present State of Health ; and, with Regard to Sailors, the Length and Healthfulness of their last Voyage. If in Consequence of this Report, those who are just arrived from a long and sickly Voyage were directly allowed fresh Provisions, and sufficient Greens, in *lieu* of salted Meats, a Diet of this Sort continued for at least three Weeks, would in all Probability sufficiently cleanse and restore their Constitution, and fit them for immediate Service.

A different Method may be necessary to be taken with imprest Landmen. A Guard-Ship is usually stationed at the *Nore*, to receive those who are taken up in *London*. But Experience has shewn how fatal she has often proved to the Health and Lives of many Seamen ; and that this Ship has become a Seminary of Contagion to the whole Fleet. One diseased Person from the Street, or Clothes from a Prison, have often conveyed Infection on board, which

it has been extremely difficult afterwards to get quit of. For the confined and corrupted Air in a large crowded Ship, greatly favours the spreading of this Contagion, and the Exertion of its utmost Malignity. From this Source, the *Environs* of *Portsmouth* and *Plymouth* have more than once been annoyed with an almost pestilential Contagion, which certain Regulations might, in all Probability, have effectually prevented.

For this Purpose, a Tender might be appointed in the River to receive such Men only as the Regulating-Captains should direct. There, the most ragged and suspicious Persons should remain for at least fourteen Days, where their old Clothes may be destroyed, and new ones given them; and their Persons being well purified and cleansed, they would thus be prevented from carrying Rags, Filth, and Infection on board the King's Ships.

The Precaution of destroying the Clothes of all such who are brought from *Newgate*, or other suspected Places, ought not to be neglected; because, although fourteen Days is

a sufficient Time to discover whether a Person is free from the Taint, yet we cannot precisely determine how much Time may be necessary to purge their Apparel from this Contagion. Woollen Cloths are disposed to retain it a considerable Time ; nor is there any other effectual Security against the Seeds of Infection lurking in Garments, than their absolute Destruction.

It may be proper further to observe, That when a Tender arrives with impressed Men at the *Nore*, from any Part of *Great-Britain* or *Ireland*, and the Men having been long confined, under close-shut Hatchways, during bad Weather, or in Summer Time, they may be supposed to have suffered by the polluted Air, which will be in Proportion to their Number, and the Time of their Confinement ; in such a Case, the Sick ought to be sent on board the foul Tender, or rather into a Lazaretto, or well-aired Place on Shore ; where, also, the Men ought to be sent without Delay, who fall ill on board the Tender. If it should happen that this Vessel becomes infected, the

Method of purifying her will be delivered in the second Section of this Essay.

As raw Sailors, and unseasoned Marines, are often the Occasion of great Sickness in Fleets, during their long Cruises and Voyages, I must beg Leave further to suggest — That the draughting of Men for special Services, if it can be done, could not fail of having a good Effect in the Service. The Rank of the Captain, and the present Fitness of the Ship, are not, perhaps, always the chief Things to be considered; as the Condition of a Ship's Company, who are to be sent upon a distant Expedition, is a Circumstance which must needs influence, in a great Measure, the Success of the Voyage.

We observe a just Distinction made in the Army between Veterans, and new-raised Levies. But the Change of Life, from the Civil to the Military, is not so great, nor so affecting to the Constitution, as a Change to the Marine Manner of living. If volunteer Landmen, and new-raised Marines, were at first incorporated with Seamen, on Board, small-

small-armed Vessels, Tenders, and Frigates of War only, it should seem that by this Means, they would not only become good Sailors in a shorter Time, but would gradually acquire a stronger Constitution, fitted for the Marine Duty, without running the Risque of Sickness at first, or of Laziness and Indolence afterwards, from want of Exercise, these small airy Frigates being always the most healthful, and most employed. Whereas, on the contrary, it is observable, that large Ships, especially the capital ones, are seldom free from Sickness, even when lying at *Spithead*, or in Harbour; so that the Draughts made into them, should be of seasoned healthy Men, from other Ships, and of such Landmen as have been somewhat inured to the Sea.

When a Squadron is fitted out for a long and dangerous Voyage, no Method would, perhaps, promise greater Security for future Health, than to make Draughts into it chiefly of such Men, from the smaller Frigates, as had been for some Time accustomed to the Sea; including in these, as many as offer of such

Sailors who had been accustomed to the Climate. This I am obliged to take Notice of, as a very different Method is often followed. When there is Choice of Men, the Captains generally prefer the most able-bodied raw young Fellows. But it has been evinced, by fatal Experience, that such vigorous Constitutions are more liable than others to be cut off by violent Fevers in hot Climates ; nothing is more common than for such Ships to lose their best Men. Whereas many hardened veteran Sailors are sometimes to be met with, who enjoy a better State of Health in the *West Indies*, than in *Europe*, having been long seasoned and inured to that Climate, either in the King's, or in the Merchants Service.

A Crew of such Men not only carry out a Constitution suited to the Climate, but, being prepossessed in its Favour, are entirely void of those Apprehensions, and that Dread of Sickness, which prove hurtful to unseasoned *Europeans*.

Large Men of War ought to have as many as offer of these Hands : And, in the Course
of

of the Voyage, it might be proper to have them recruited from the smaller Ships, as all new Sailors will continue much healthier, and become sooner seasoned in small Cruisers. — These Advices are founded upon an Observation, that the Difference in Point of Health betwixt Ships of different Rates, is more considerable than would at first be imagined. Thus, Accident excepted, during an epidemical Sicknesh in a Fleet; if a Ship of twenty Guns has One Tenth of her Complement afflicted, a fifty Gun Ship will have One Fifth; a sixty Gun Ship One Fourth; and a seventy or eighty, perhaps One Third; which I have often remarked, and is easily accounted for, although so great a Disproportion.

What I have thus far suggested, I am sensible may be often found incompatible with the immediate Exigencies of the Service; and is, with due Deference, submitted to the Consideration of superior Judges, and of those who have the Superintendence of the medical Marine Department. — I now pass on to

what is more properly the Subject of this Essay, *viz.* To propose the most effectual Methods of preserving the Health of the Men at Sea, and of preventing the various Distempers to which they are incident in different Climates, and which proceed from their peculiar Circumstances and Situation.

I shall begin with such Maladies as are usual in northern Climates, and among the Channel Cruisers.

Though an intense Degree of Cold, if the Air is at the same Time pure and dry, is productive of few Diseases, when Seamen are sufficiently clothed, and kept in due Exercise, yet such a State of Air is not often met with at Sea in northern Latitudes, nor by our Channel Cruisers in the Winter. — The Season is then, for the most Part, unsettled, cloudy, moist and rainy, and the Men must necessarily undergo an extraordinary Fatigue, during the inconstant and tempestuous Weather which they are almost continually engaged with. The usual Consequences, are
Colds,

Colds, accompanied with feverish and inflammatory Symptoms, and especially rheumatic, pleuritic, and peripneumonic Complaints. These latter Cases require plentiful Evacuations, chiefly Blood-letting; by the early and free Use of which, many Consumptions, as also chronic Rheumatisms, an afflicting Ailment to old Sailors, may be prevented.

Now as most Disorders, especially catarrhal Fevers, usual at this Season, are probably owing to a Stoppage of Perspiration; hence, whatever promotes that necessary Evacuation, seems to promise the most certain Protection against these Evils. And, for this Purpose, I would, in the first Place, by Way of Diet, recommend a very simple Preservative; it is, the free Use of Eschalot, Garlic, or Onions. The two former are put up with the Surgeon's Necessaries, but are so very cheap, that they may be afforded by the Purser, in *lieu* of the Savings of Oatmeal. Instead of Burgou, Water-gruel might be served in a Morning to the Men, with a proper Quantity of Eschalot, Onions, Leeks or Garlic, boiled in it. This will be found as wholesome a Mess as can well be

be contrived for Seamen at that Season. It is an anti-scorbutic, as also a tepid, relaxing, perspirative Diluent ; and Food possessed of these Properties, is the proper Antidote to the hurtful Influences of cold bad Weather at Sea.

Most of the Channel Cruisers have a Quantity of Brandy put on Board to be served to the Men, when the Small-beer is expended, but there is often Occasion for it sooner ; because, during a violent Storm of Wind, or in bad Weather, or when the People are kept constantly wet and chill, and undergo an uncommon Degree of Fatigue, Small-beer does not sufficiently support their Strength and Spirits. Upon this Occasion, an Allowance of half their Quantity of Small-Beer, and a Quantity of Brandy, equal to the Remainder, would be found very beneficial. It should be mixed up in the following Manner : To a Pint of Small-Beer, add a Quartern, or fourth Part of a Pint of Brandy ; let it be sweetened with Melasses, and acidulated with Vinegar, so as to be made palatable. This is a celebrated

brated Beverage in the *Russian* Army, where it is called *Ashbetten*; no Regiment marches without carrying a Cask of it along with them: And it is by this corroborative Drink, the Men are supported, and enabled to undergo their long and fatiguing Marches. They indeed use Honey instead of Melasses; and their Physicians have lately made some Improvements in the Composition, by an Infusion of Gentian, and other aromatic Bitters in the Spirit, which would seem, however, to be of no great Consequence.

This Draught will be found much wholesomer than un-diluted Spirits; the serving of which to the Men, towards the End of their long Cruizes, contributes often to excite general and fatal Scurvies in the Fleet. The Fermentation occasioned by the Melasses, or Honey, and the Addition of Vinegar, or, in its Stead, Cream of Tartar, as shall hereafter be mentioned, will in some Measure serve to obviate that, and some other Maladies usual in these Cruises.

But

But at the same time it is necessary to observe——That dry warm Clothing and Bedding, are of the greatest Consequence in Winter, and without which, other Means of preserving Health will have little Effect. Every Man should be obliged to furnish himself with at least two Flannel Under-Jackets; an Article which ought to be added to the Purser's Slops. They are generally the most naked and ragged Fellows who are attacked with the Winter Diseases. When the Hammocks are carried up to Quarters, they ought always to be covered with Tarpawlins kept for the Purpose; and it ought to be particularly remembered, that humid Clothes, and Bedding, are frequently a leading Cause of Sicknes in a Ship.

The Scurvy is a Disease common in the Winter and Spring, and very fatal to Seamen in the Channel Cruizers. But ample Directions have already been given for the Prevention and effectual Cure of this Calamity.*

I

* Dr. *Lind's* Treatise on the Scurvy, especially Chap. III. Part 2; where many more Directions concerning the Preservation of Seamen, both in Health and Sicknes, are delivered; and which it is deemed unnecessary to repeat,

I cannot, however, omit taking Notice of one Thing: When large Squadrons of Men of War are kept constantly employed in the Channel Service, the Length of their Cruises, generally from ten to thirteen Weeks, often occasions a great Sickness; and of late a greater Mortality has been observed, than could well be expected in such a healthy Climate. When so long a Continuance at Sea is indispensably requisite, the following has been proposed as a most excellent and effectual Expedient, to preserve the Health of a Fleet.

One of the Press-Tenders might be ordered out once a Fortnight from *Plymouth*, to repair to the Rendezvous or Station of the Squadron, loaded with live Cattle and Greens, to be served to the Men by the Purser, in *lieu* of their salt Meats. The Men on Board of her should have the Privilege of carrying out, as their private Venture, all Manner of Roots, Fruits, and Vegetables, to be sold at a reasonable Rate in the Fleet: By such Means, a Market of Greens and Fruits might constantly be kept by Suttlers, who should be
only

only prohibited the Sale of Spirits. Onions, Leeks, Shallots, Turnips, Cabbage, Carrots, Apples, fresh soft Bread, Cyder, Lemons and Oranges; or even the most common Herbs in their Season, which grow in great Plenty wild in the Fields about *Plymouth*; such as Dandelion, Water-creffes, Brooklime, and the like soveraign Antiscorbutics, would prove a high Refreshment to the Men; and would soon be bought up by them either for Money, or if that is wanting, in Exchange of their Savings of salt Meat and Biscuit, which are commonly sold to the Purser for ready Money, and expended in pernicious Drams.

The Run of the Storeship, or Tender, from *Plymouth* or *Ireland*, to the Fleet, will seldom, with a fair Wind, prove above forty-eight Hours. Many Sorts of Greens may be preserved for any Length of Time, by a Method afterwards to be described. But there are some Articles which the Suttlers ought to be obliged at all Times to carry out, and be provided with in Proportion to the Rate of the Ship, upon Pain of forfeiting their Licence. These are
either

either the Rob of Lemons, or Juice of Oranges ; * and the Juices of the above-mentioned common antiscorbutic Herbs, which being mixed with a sixth Part of Brandy, will remain good for many Months.

It is hardly to be supposed that any Man who has the least Tendency to a Scurvy, would not willingly part with a Piece of salt Beef, or a Pound or two of Biscuit, to purchase these obvious Means of Health, and a Reprieve from dying of a most painful and loathsome Disease. By a proper established Regulation of this Sort, not only some thousand Lives might be preserved, but the Ships would be enabled longer to keep the Seas, and not be often under a Necessity of quitting their Station, on account of a sickly, dying, and dispirited Crew.

I shall now conclude this Part of my Subject, with some Directions which may be of Use to particular Persons, in their cold Winter Cruises.

The

* See Dr. *Lind's* Treatise on the Scurvy, Page 162.

The most proper Spirit a Man can well use by way of a Cordial Dram, at this Season, is Garlic Brandy. He will find a much less Quantity of it, than of the pure Spirit, warm his Stomach; and it will keep the Breast, Skin, and Kidneys, free from Obstructions. But here it may be worth while to subjoin a Caution, which is, that when a Fellow is almost chilled to Death by the excessive Cold, as I have known some by falling a-sleep in their Watch upon Deck, a Dram of any Spirit often proves instantly fatal. In this State he ought immediately to be put to bed, and to swallow a Draught of some warm thin Drink, such as warm Water, Water-gruel, Sage-tea, or the like; and afterwards the distilled Spirit will prove less dangerous, and more beneficial, in restoring Warmth. Private Messes will reap Benefit in cold rainy Weather, by the Use of Sage, Sassafras, or a few toasted Juniper Berries, infused as Tea, with the Addition of a small Quantity of Garlic Brandy.

It may be of further Use to observe — That a Man will not be near so subject to catch Cold

Cold when he is wet upon Deck, and using Exercise, as when afterwards he goes below Deck, and sits long at Rest in his wet Clothes ; and especially when he sleeps in them, or in a damp Bed. Nor will he at any Time be so liable to be affected in his Health by the Weather, if, before going upon Deck, he either eats somewhat, or takes the *Ashbetten*, with a Bit of Biscuit, as he would be if the Stomach was quite empty.

One Cause sometimes of general Sicknes, we must not here omit to mention. This is the Freshness of a Ship's Timbers : A Vapour constantly exhaling from the Wood may be felt, and is often seen by Candle-light in a well illuminated Ship. — It appears sometimes like a thin Mist, and at other Times like a luminous Stream. A prevailing Dampness is likewise evident in the Mould and Rust with which every Thing liable to either, is affected. It produces ill-conditioned irregular Fevers, accompanied with a Diarrhœa and anomalous Symptoms. These bad Consequences, it is much easier to prevent in the Dock-

yard, than after the Ship is built: For, notwithstanding repeated Fires made to dry the Timbers, this Sweating of the Wood will continue for some Months, in a cold Country. Fumigating the Ship frequently, when at Sea, with the Steam of Tar or Pitch, may, perhaps, be found to correct, in some Measure, this pernicious Vapour; which is experienced to be attended with fewer bad Consequences in small airy Frigates, than in larger Ships. It is certain that very large new built Men of War, are not altogether so proper for long and sickly Voyages, as those which are dry and well seasoned*.

When

* This Article not sufficiently attended to, well deserves Consideration. Experience, the Test of Truth, confirms the Inconvenience which Seamen suffer from the Atmosphere of a recent built Ship.

Whether the Exhalations from the sappy Wood operate otherwise than as simple Moisture, may admit of some Conjecture. In many Instances where the Smell cannot distinguish the Presence of any Effluvia, they will, however, exert no inconsiderable Influence. Thus, Turners, in working the Wood of the Manchaneel-Tree, would be severely affected, did they not securely guard against its Virus. The Halitus of a Field of Poppies, has been known to induce a Narcotic Disposition in the By-stander. The Exhalations of Fraxinella, and some other Plants, are said to be inflammable in the warmer Countries.

When the Service demands any formidable Succours to be sent abroad, the *Mediterranean* seems that happy Mediocrity of Climate to which such Ships might be, to the greatest Advantage, appropriated. For a Climate too condensing, like our own, or that of the Channel, would protract the Seasoning of the Wood, as the Extreme of the torrid Zone, would also have its Inconveniences. What still adds to the Prejudice of the Men, and may be a needful Caution to all, is the preposterous Custom of washing the Decks after Sun-set. For, in whatever Country or Season this Method is pursued, it cannot fail of being greatly detrimental to the Seamen's Healths.

For the Preservation of the Crew in a southern Voyage, Methods very different from what

tries in a very dry and calm Season: And the celebrated *Van Swieten*, in the early Part of his Life, suffered, repeatedly, a temporary Loss of Memory, from the Vicinity of a Plant. Vapours from Wood, especially when inclosed as in a Ship, may, besides their relaxing Quality, in common with others, convey Indisposition peculiar to their respective Natures. This by Way of Speculation.

what have been directed will be found requisite. And as in these Voyages, on account of their Length, Variety of Climates, and the unhealthy Harbours Ships often put into, they incur a greater Risque of Sicknefs, and are with more Difficulty recruited than in *England*, therefore I shall treat this Part of my Subject at greater Length. But before I proceed to the Diseases incident to the Men in those Climates, it may be proper to premise some general Directions for their Preservation.

In an intended Voyage to the Coast of *Guinea*, or the *East* or *West Indies*, the first Point of Consequence to the future Healths of the Men, seems to be to make such a Change in the Diet or Ship's Provisions, as may prepare the Body for the Alteration it must necessarily undergo, by passing from a cold, to a warm Climate. — Every one's Experience must convince him, that both the Appetite and Digestion, are considerably impaired in hot Weather. And it is the same in sultry Climates,

Instinct has taught the Natives between the Tropics, to live chiefly on a vegetable Diet of Grains, Roots, and subacid Fruits; with Plenty of thin diluting Liquors. Whereas a full fresh Diet, and tenacious Malt Liquors, are found to be better adapted to the Constitution in our own, and other northern Countries. We observe the Sailors in Winter, and especially such of them as visit the *Greenland Seas*,* to be remarkable for a voracious Appetite, and a strong Digestion of hard salted Meats, and the coarsest Fare. But the same Men, when sent to the *West Indies*, become soon sensible of a Decay of Appetite, and find a full, gross, salted Diet, pernicious to Health. — It is, indeed, a Truth evinced by most fatal Experience, that their devouring of large Quantities of Flesh Meats, and using the same heavy obdurate Food in the *West Indies*, or upon the Coast of *Guinea*, and in other warm Countries, as they were accustomed to at home, have proved the

Destruction

* See the Bishop of *Bergen's* History of *Norway*, Vol. II, Page 271.

Destruction of many thousand *English*, in those Climates.

The first Step then to be taken, with a View to preserve the Health of a Squadron of Ships bound on such Voyages, would seem to be to diminish the Allowance of salt Flesh Provisions. This becomes the more necessary in such a Voyage, as the Men are, for the most Part, put to short Allowance of Water. — Now nothing can be more pernicious to a Ship's Company, than a full Allowance of salted Beef and Pork, and at the same Time a short Allowance of Water. This is productive of scorbutic and many other Diseases, fatal at Sea, which no other Measure can avert, but a Diminution of the Government's Allowance of Beef and Pork, in Proportion to their Scarcity of Water. There remains another very material Objection against a full Diet of salted Flesh in hot Climates. It is this; that no Beef or Pork can possibly be preserved by Sea-salt, free from a Taint or Degree of Putrefaction, as evidently appears by the greenish Streaks in the Fat. — This

might

might possibly be prevented by the Addition of a little Nitre in salting, whose Virtue is allowed to be proportionably enforced in the warmer Latitudes. But such Considerations being foreign to my present Purpose, I shall only observe, that as almost all Diseases in hot Climates are of a putrid Nature, so Flesh, which has a putrid Tendency, cannot fail, in some measure, of contributing to their Production.

There are not wanting Instances of the good Effects attending this Method of putting the Ship's Company, in long Voyages, upon a very short Allowance of salt Meats. The following is too much to the Purpose to be omitted, as it seems to demonstrate the Utility of the Measure, by a comparative Trial, at different Times, of its Effects.

In the last War, the Men belonging to the *Sheerness*, bound to the *East Indies*, apprehensive of Sickness in so long a Voyage, petitioned the Captain not to oblige them to take up their salt Provisions, but rather to permit them to live upon the other Species of their

C

Allowance.

Allowance. Captain *Palliser* ordered, that they should be served with salt Meat only once a Week, *viz.* Beef one Week, and Pork the other. The Consequence was, that after a Passage of five Months and one Day, the *Sheerneys* arrived at the *Cape of Good Hope*, without having so much as one Man sick on board. As the Use of *Sutton's* Pipes had been then newly introduced into the King's Ships, the Captain was willing to ascribe Part of such an uncommon and remarkable Healthfulness, in so long a Run, to their beneficial Effects : But it was soon discovered, that, by the Neglect of the Carpenter, the Cock of the Pipes had been all this while kept shut. This Ship remained in *India* some Months, where none of the Men, excepting the Boats Crews, had the Benefit of going on Shore ; notwithstanding which, the Crew continued to enjoy the most perfect State of Health. They were, indeed, well supplied there with fresh Meat.

On leaving that Country, knowing they were to stop at the *Cape of Good Hope*, and
trusting

trusting to a quick Passage, and to the Abundance of Refreshments to be had there, they eat their full Allowance of salt Meats, during a Passage of only ten Weeks; and it is to be remarked, the Air-pipes were now open. The Effect of this was, that when they arrived at the *Cape*, twenty of them were afflicted, in a most miserable Condition, with scorbutic and other Disorders. These, however, were speedily recovered on shore, by the Land Refreshments.

Being now thoroughly sensible of the beneficial Effects of eating, in those southern Climates, as little salt Meat as possible, when at Sea, they unanimously agreed, in their Voyage home from the *Cape*, to refrain from their too plentiful Allowance of salted Flesh. And thus the *Sheerness* arrived at *Spithead*, with her full Complement of 160 Men in perfect Health, and with unbroken Constitutions; having, in this Voyage of fourteen Months and fifteen Days, buried but one Man, who died in a Salivation for the Pox.

I have been told, that, according to the Regulations made for the Sick in the *French* Service, every Squadron, consisting of a certain Number of Ships, is provided with a Tender, to carry out Necessaries for the Diseased. The principal Articles are, live Stock, Flower for fresh Bread, Wine, &c. The fresh Flesh Provisions must needs be of great Benefit to the Diseased, though a larger Quantity of them is more indispensably necessary both in the *French* and *Spanish* Fleets, than in ours, because the *English*, in medical Practice, do not permit the Use of Flesh Soups in Fevers and other acute Distempers, which the *French* and *Spanish* Practitioners do *. These Flesh Soups, when required at Sea, might occasionally be prepared

* The *French* Allowance for their Sick, is said to be eighteen Ounces of soft new-baked Bread, and Three-fourths of a *French* Pint of Wine a Day. They carry out Fowls of all Sorts, Bulls, Sheep, Kids, Eggs, &c. which are distributed to the Patients according to the Direction of the Surgeon. Their other Necessaries are pretty much the same with those furnished to *English* Men of War, viz. Rice, Barley, Sugar, Tea, Prunes, Raisins, Vinegar, Spices of all Sorts; also Butter, Oil of Olive, &c.---We indeed have, perhaps, a better Assortment of preserved Fruits, which are extremely useful, such as Tamarinds, Currants, preserved Ginger, &c.

prepared at any time of a portable Soup, which the Shins, the Necks, Hearts, and other Offal of the Cattle, killed at the Victualling-Office, might supply. The portable Soup of Mutton, as less viscid (which Viscidity, indeed, Dilution will correct) or a Junction of both, might, occasionally, give it an acceptable Variety and Relish, to sick and delicate Stomachs.

Besides the Satisfaction which would arise in common, from conferring Benefits on the Sick, the most divine of Charities, the Advantages, which those in a convalescent or recruiting State would derive from this Institution, would abundantly recompence the State, the apparent additional Expence, as the positive Preservation of its Naval Subjects, would, in the End, prove the most frugal Plan.

This refreshing Sustenance, and, I may add, inspiring Cordial, on the most importunate Occasions in our Navy, has been long an Article among the lamented Wants, amidst the acknowledged Care and Humanity that the several honourable Boards of Marine Department have variously exercised.

Fermented Bread, too, from its being sooner subdued, and assimilated into Nourishment, by the weakned digestive Powers, as well as the Inability of Scorbutics in chewing a harder Substance, might be very advantageously allowed the Sick. Nor could the Quantity consumed by them, though daily made a-board, be any Inconvenience to the necessary Oeconomy and Business of the Ship.

Wine has likewise its Merits : It is found in many Fevers, especially towards their Decline, to exceed, by far, the Shop medicinal Cordials. Add to this, that when the Fever is entirely gone, it proves the best and quickest Restorative which a Sailor can have at Sea. Rum, or other distilled Spirits, in whatever Manner diluted or acidulated, do not, in such Cases, produce the like Effects. It will also appear in the Sequel, that the Use of Wine becomes an excellent Means of Preservation against the Infection of contagious Diseases in a Ship. To answer these salutary Purposes, I would advise, that, before the Stock of

Madeira

Madeira Wine is quite expended, some Casks should be reserved for the Use of the Sick in the Voyage. This may be issued to them at proper Seasons, as the Surgeon may direct, in *lieu* of Rum, or whatever Spirits are in Use at the Time.

I am of Opinion, that proper Regulations for preventing the Abuse, and improving the Benefit that may be derived from such vinous and spirituous Liquors as are allowed to the Men, cannot fail, at all Times, to have a very remarkable Influence on the Health of the Crew. The Abuse of these Liquors, more especially the swallowing down large Quantities of undiluted Spirits, is of the most fatal Consequence in every Climate, and has been the Bane of many thousand Mariners ; while, on the other hand, it is most certain, that by proper Management, these noxious Draughts might be converted into a sovereign Remedy in unwholsom Climates. This, the Sea-Officers, who drink more of them than the common Men, daily experience. Observation has indeed sufficiently instructed us, that

distilled Spirits, well diluted and acidulated, and used in a moderate Quantity, are wholesome and proper for healthy labouring Men in hot Weather. Somewhat is requisite to support the Strength of such People, and perhaps Punch is the most salutary Liquor that can be contrived to answer this Purpose; besides its immediate cooling, refreshing, and invigorating Quality, it is, in the Whole, well adapted to prevent the Diseases arising from hot and moist Weather, and the Tendency to Corruption in the animal Juices, which is from thence constantly induced.

If the *West Indians* could fall upon a Method of making such large Quantities, at a Time, of the Rob, or inspissated Juice of Lemons or Limes *, as would reduce them to a low Price, Mariners, and all other Inhabitants of the torrid Zone, might then be supplied with a noble Preservative of Health, in sultry unhealthful Climates. One of the greatest Physicians † of the *Indies* makes the following

* See Dr. *Lind's* Treatise on the Scurvy, second Edition, P. 162.

† Bontius de *Medecina Ind.*

lowing Remark: “ The most knowing Prac-
 “ titioners, in *India*, place greater Confi-
 “ dence in Lemons against the malignant
 “ Diseases, pestilential Fevers, &c. of the
 “ Country, than in costly Bezoar or Theriac.
 “ For my own Part, says he, I affirm, that
 “ in my Practice there, I found more Benefit
 “ from them, than from any one simple
 “ Remedy.”

Syrup of Lemons ought always to be put
 in the Surgeon's Medicine Chest, and be
 occasionally prepared and renewed in a suf-
 ficient Quantity, at every Port, where these
 Fruits are cheap and in season. Orange Juice,
 an excellent Succedaneum for Lemons, may
 be preserved, during the Course of the longest
 Voyage, in the following Manner. Care must
 first be taken to squeeze only sound Fruit, as a
 tainted Orange will endanger the spoiling of
 the whole; the expressed Juice must be de-
 purated by standing a few Days, or filtrated
 till it is pretty clear; then it is to be put into
 small Bottles, none of them containing more
 than a Pint of Juice; in the Neck of the
 C 5 Bottle,

Bottle, a little of the best Oil of Olive is to be poured, and the Cork well sealed over.

I cannot dismiss this Subject of preserving Fruits, and their Juices, at Sea, without taking Notice, that, by repeated Experiments, I find it very easy to preserve Greens, Pot-herbs, and proper Vegetables, a sufficient Time at Sea. The Method, however simple, is effectual ; and although it may be deemed inconvenient to carry out a sufficient Quantity for the daily Use of the whole Ship's Company, yet particular Messes may reap great Advantage from it.

All have it in their Power to enjoy the green and fresh Productions of Nature ; and surely, Men, the most regardless of their own Health, must esteem a Dish of Greens with their salt Meat as a Delicacy, after having been some Months at Sea. The last Experiment I made, was this : On the 5th of *March*, I took a Parcel of common Coleworts and Leeks, and, after washing them clean, shook the Water well off, and cut the Leeks into Pieces of an Inch or two in Length, and stripped the Cole-

Coleworts from off the thick Stalks ; then having procured two wooden Dishes, well seasoned with a strong boiled Pickle of Salt, I sprinkled, when dry, a thin Layer of pounded Bay-salt on the Bottom of each, upon which was spread a thin Layer of the Vegetable, covered with dry Bay-salt, and so alternately, until the one was filled with Coleworts, and the other with Leeks. A Cloth, wrung out of boiled salt Pickle, was afterwards put upon the Mouth of the Vessel, and the whole pressed down with a Weight. On the 5th of *June*, after they had been kept three Months, I took out a little of each, and observed the Leeks to retain their strong peculiar Flavour. After opening the Folds of the Leeks, in order to wash out the Salt, the Vegetables were put, for about ten Minutes, into cold Water to freshen, then to be boiled ; when, upon a Comparison, both of them were found, in every Respect, equal to what had that Morning been taken out of the Garden. The entire Verdure and Tendernefs of the Coleworts, and the perfect Flavour of the Leeks, were preserved, without the least Degree of any saline Impression.

At

At this Time of writing, the 5th of *January*, Greens, having been kept for ten Months, still retain, when prepared as above, for boiling, their perfect Verdure, Succulency, and Taste. It is needful to add this Caution, that earthen Vessels are improper for preserving Greens in this Manner, because the Salt in a short Time will penetrate their Substance, and the Outside of the Vessel become crufted over with saline Efflorescencies.

But to return from a Digression, which I hope will not be deemed uselefs. For want of the aforementioned Fruits, or their Juices, or Shrub, I would suggest another vegetable Acid for the Use of the Navy, which is the Cream of Tartar. A Dram, or the eighth Part of an Ounce of this, will be sufficient for each Man a Day, and for half a Pint of Spirits, mixed up with a Pint and a Half of Water. This Cream of Tartar, is the vegetable essential Salt of Wine, and is an agreeable Acid. If the Officers, and others in the Ship, who make use of Lemons or Oranges, would reserve their Peels to be put into the

Spirits

Spirits served to the Men, it would greatly improve the Flavour of the Punch, and make it little inferior to what is made with Lemon-Juice. I must add, that this is so innocent an Acid, that it may be taken in the Quantity of an Ounce or two, without producing almost any sensible Effect, except gently moving the Body.

It has hitherto been the Aim of those, who have made Marine Diseases their Study, to find out a proper agreeable Acid, which Sailors might be induced to use, as the best Preservative against many of their Diseases, which are mostly of a putrid Nature. Vinegar, Spirit of Salt, Elixir of Vitriol, and many others, have been severally recommended, and have been experienced, under proper Circumstances, to have produced good Effects: Cream of Tartar has the Advantage not only of being much more palatable than any of these Acids, and, according to the Sentiments of Doctor *Boerhaave*, and my own Experience, beneficial, and well adapted to the Constitution of Mariners; but is also the
cheapest

cheapest Acid that can be recommended for the Purpose. An Allowance of the eighth Part of an Ounce a Day, will not cost the Government one Shilling yearly, for each Man in the *West Indies*. It dissolves in boiling Water, and imparts an Acidity to cold Water more than at first would be imagined, considering the large Quantity of it left undissolved. I imagine, however, the best Method would be, to boil Over-night, in a large Kettle of Water, about two Pounds and a Half of the Cream, which I think will be sufficient to acidulate a Hoghead of Water: Or, as it is now a general Practice to mix Water with the Spirits, before serving them to the Men, a due Proportion of this Acid may be issued to each Mess, it being certain, that there are but few who would not prefer the Use of such an agreeable Acid, to Water and Rum only: And each Man having it in his Power to exchange Part of his salt Provisions (which are so detrimental to Health in hot Countries) with the Purser for Sugar, may then be daily supplied with a Quart of excellent Punch:

Nay,

Nay, even an Increase of the ordinary Allowance of Punch, provided it is issued out at different Times of the Day, may safely be indulged, in *lieu* of the baneful salted Meats; the inflammatory Quality of the Spirit being greatly corrected by mixing it in this Manner. Hence, the Whole becomes a salutary Composition of a cooling, corroborative, antiputrid, and diuretic Nature.

The opposing Quality of Acids, to the intoxicating Power of Spirits, is observable on more Occasions, than that of the Analysis of Wines. From a Mixture of Vinegar and Alcohol, will result such a Combination, as shall efface the different Tastes of the *Menstrua* in their separate State; or, in other Words, obliterate, in a manner, those Properties by which they are usually distinguished. The high ardent Nature of the one, becomes thus qualified and attempered by the other. And hence, whilst upon the Subject of potable Spirits, one Piece of Advice may not be unacceptable, in an unpitied, but sometimes dangerous Condition: I mean, the voluntary Dis-
ease

case of Drunkenness ; a State from which Numbers never wake, and many but return to Memory, to fall the Victims of the Fever it induces : A Caution therefore may be the more needful, as it is a Case not unfrequent a-board of Ships, and as I do not remember that its Treatment has been often spoke of.

In the Fit of Stupefaction, it is but too usual for the Delinquent to lie in an horizontal, or, what is much worse, an head-depending Position. This Situation should be immediately altered to an erect, or gently inclined, sitting Posture. If in a Bed, or Hammock, his Head should be raised, and a due Care taken that his senseless State does not change it. Warm Water, well acidulated with Mineral Acid, or Vinegar, or the Juice of Fruits, should be given him, and a Sponge dipt in *Acetum*, applied to his Mouth and Nose. Instances of the good Effects of this Method have been frequently experienced. The Necessity there may be for Venæsection in this Case, is almost too obvious to inculcate, as well

well as an Emetic of gentle, but speedy Operation ; Immersion of the Feet in warm Water, solutive Clysters, or whatever else may abate Distention, or take off from the Pressure above : These, I say, with favouring Perspiration, (generally a salutary, but now a most needful Evacuation) are the usual Methods, when any Extremity threatens. Consequential Symptoms may be treated at the Discretion of the Practitioner, who will not regard them as subsequent, but original Complaints.

Those who can walk in the Air, or sit up with an over Dose of Liquor, will do well to embrace that Security, till the Kidneys, or some other Strainer, has abated the Surcharge ; for going suddenly to sleep in an inebriated State, has, by Suffocation, or Apoplexy, put a Period to many Lives.

Did the Brevity of this Work allow of Excursion, we might observe, that to avert the Dangers of Opium, too liberally received, nearly a similar Treatment should take Place. But for this, let a Note suffice *.

* The Servant of a Druggist (a Case related by the Physician concerned) had become comatose from the powdering of
Opium.

I should be wanting in my Duty to the Public, if I should omit, in these general Directions for the Preservation of Seamen in long Voyages, the Use of Dr. *Hales's* Ventilators †, the most beneficial Invention for Mariners, which this Age has produced. I must add, that the more the Men are kept in Exercise and Action, during fine and calm Weather, the better will their Health be preserved : And it is each Man's Interest, to take care that his Chest, Clothes, and Bedding, be often aired, and kept as free as may be from Damp and Rottenness. Those, who are remiss in these Articles, should be compelled to become more cleanly.

The ordering as many of the Men as can be prevailed upon to use the cold Bath, either
in

Opium. After much teasing, Friction, volatile Scents, with other Stimulants, and even Music, he remained senselessly stupid. At last, the Application of Vinegar, on a Sponge, to his Nose and Mouth, produced the first Effort of Attention to what was doing. He then, sensible of its refreshing Power, seemed greedily to court its Continuance, 'till an Opportunity was given of farther prosecuting his Recovery, by giving Acids internally, and other assisting Means.

† See his Book on Ventilators.

in Tubs under the Fore-castle, or to dip in the Sea, early in the Morning, has been found extremely beneficial in warm Weather, and in hot Countries. The Body is thereby cooled and refreshed, the Fibres braced up, and invigorated, so that the Men become afterwards better enabled to undergo the Fatigues and Heat of the Day. This would prove not only an excellent Means of Health, but of Cleanliness : And indeed it has been found experimentally true, that the cold Bath is of sovereign Use to the *Europeans* in the torrid Zone ; and that by cleansing the Skin, and invigorating the whole Habit, it is so far from stopping the plentiful and necessary cuticular Discharges in hot Weather, that it promotes them. I can affirm, from my own Experience in hot Climates, that many Diarrhœas, and other Complaints, the pure and sole Effect of an unusual and great Heat, (relaxing the System of the Solids, and occasioning a Colliquation of the animal Juices) have not only been cured by the *Bath*, but the Return, and even the Attack, of such Diseases, effectually prevented by it.

I am persuaded that the remarkable Healthfulness of the *Tyger* Ship of War, commanded by Captain *Latham*, in her late Voyage to the *East Indies*, was more owing to the Use of the Cold Bath, than to any other Circumstance regarding the Ship, or her Company*. It is indeed worthy of Observation, that, in this Voyage, two Ships kept together in Company, and were pretty much of the same Rate; yet, at the End of the Run, one of them had above two hundred Men sick on board, whilst the other had not above nine or ten. This proves, I think, to a Demonstration, that very minute Circumstances, in a Ship, often occasion, or prevent, a general Sickness, and consequently a great Mortality in a Voyage.

Most People know, that the Cold Bath, though very serviceable in sultry Weather, and at such a Time often absolutely necessary, as

* See a Letter from Captain *Latham*, inserted in the *Gentleman's Magazine* in the Month of *April* 1755. It is dated from *St. Augustin's Bay*, in the Island of *Madagascar*, 9th of *September*, 1754.

I have experienced in my own Person in hot Countries, yet may be injudiciously and preposterously used. The Objections, are their too long Duration in the Water, or when the Sailors are permitted to go into it over-heated with Work or Liquor, when the Stomach is full, or a critical Eruption, called the prickly Heat, appears upon the Skin.

These general Directions, being premised, I proceed to treat more particularly of such Diseases as are usual, or may be apprehended in hot, sultry, and unwholsom Climates ; with a View to point out what promises the most certain Protection against their Attacks.

The first Distempers which generally occur in a Voyage to the Southward, are, for the most part, of an inflammatory Nature, and owing to a sudden Transition from cold to hot Weather. This occasions a Repletion and Distention of the Vessels ; hence, such Disorders, and hence, all *Europeans*, upon their first Arrival under the Tropic, bear Evacuations much better than afterwards. It has been a common Practice at Sea, to bleed a
Number

Number of the Ship's Company, upon their first Arrival in a warm Latitude, by way of Prevention: But Experience does not shew, that this Operation has any such Effect upon their future Health; nor can the Propriety of bleeding almost all the Men, as it is often done in the Merchants Service, without Distinction of Age, Constitution, &c. be well justified; though we allow Bleeding, in some particular Cases, useful at this Time, and necessary. I shall endeavour elsewhere* to particularise the Cases in which this Operation is needful; let it suffice for the present to observe, that previous Blood-letting is not to be depended upon, as a Security against the Diseases of intemperate Climates.

It often, indeed, happens, that the Men enjoy an uninterrupted State of Health in the torrid Zone: When the Ship meets with fine favourable Weather, and has a good Passage, and especially, when she leaves *England* in the Autumn, and arrives at *Jamaica*, or other Places to the northward of the *Æquator*,
when

* In the Appendix.

when the Sun is pretty well advanced towards the southern Tropic : It being generally upon their Arrival in Harbour, and after anchoring in sickly Places, that the Men are attacked with the Diseases of the Country.

The contrary, however, may happen, and it has been remarked, that when Ships crouded with Men have a tedious Passage, or are long becalmed at Sea, during a Continuance of hot, moist, and close Weather ; or when they suffer by heavy Rains, usual in their Season, within the Tropics, Diseases different from the former, and much more fatal to the Men than those of the inflammatory Kind, begin to appear.

A few of the Sailors are sometimes at first seized with the Bloody Flux, which denotes a Disposition in the Air to Putrefaction, and to beget a malignant Fever of the remitting, or intermitting Form, most frequently of the double tertian Kind. This Fever, which is the genuine Produce of Heat and Moisture, is the Epidemic between the Tropics, upon the Coast of *Guinea*, and in *Jamaica* ; and is the autumnal

autumnal Fever of all hot Countries : It is extremely different from what is called the yellow Fever, or black Vomit, which is rare, and takes place only among a Few, on their first Arrival in the *West Indies*. In large Ships, and Fleets, it would seem to be generated among the Sailors by Contagion, and by their great Intemperance, and constant Use of a gross, corrupted, salt Diet, altogether unsuitable to the Climate. From what I have been able to learn of the black Vomit (for I never saw the Disease) it would seem to bear the same Analogy to a Cholera Morbus, as a continued Fever, does to an Ephemera, or simple Day Fever.

But to return to the true Epidemic in the torrid Zone ; I have found, by manifold Experience, in the most unhealthy Rivers upon the Coast of *Guinea*, that the Safety of the Patient in this Disease, entirely depended upon the Fever intermitting ; or at least, its remitting so favourably, as might afford an Opportunity of throwing in, half an Ounce, or an Ounce, of the Jesuits Bark. The Bark is indeed

indeed, at this Time, universally known, by Practitioners of all Nations, to be the only sovereign Medicine to this most frequent and malignant Fever, in those sickly southern Climates.

In the Course of my Inquiries into this Subject, I have had an Opportunity of consulting the Journals, kept in those Voyages by many ingenious Surgeons of Ships of War; and, however irregular, or diversified under different Appearances, this Fever might shew itself, I found the Distemper was essentially the same, and that the Bark alone, judiciously administered during a Remission, or Intermission, proved the most certain Means of Cure. Many Instances might be produced, several Histories of Fevers might here be related, wherein the Efficacy of the Bark would be fully evinced. I shall only observe, that the Fever of the Island of *St. Thomas*, is, to a Proverb in that Part of the World, deemed the most malignant and fatal Species, of any *African* or *American* Fever: But by a very accurate Account of this Fever, which I have

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had

had Occasion to peruse, it would appear, that the Bark is likewise the only Remedy.

It is again to be observed, that this Remedy proves not only a Specific for this universal malignant, remitting, or intermitting Fever, but the continued Use of it, is an effectual Preservative against a Relapse. Hence, one would naturally infer, that the Use of the Bark, would prevent the Attack of this Sickness ; and, accordingly, Experience (the surest Guide and Standard of Medical Truths) testifies, that the Bark proves a Defence against the Attack of this Fever, and other malignant Disorders, to be apprehended in unsalutary Climates, and during a corrupt and malignant Disposition of the Air. — This Hint, I first received, when on the Coast of *Guinea*. I was informed, that the Factories were furnished with proper Quantities of the *Cortex*, by the late *African* Company, which was taken by way of Prevention, during the rainy and sickly Season ; and that it was attended with remarkable Success, with such as could be brought to submit to a regular

regular Course of Life, and to refrain from eating such Quantities of animal Food as they were wont to do in *England*, which yearly destroys many on that Coast. I have since been confirmed in my Opinion, of the Success to be expected from the Use of the Bark, taken by way of Preservative, by many Considerations and Facts: I shall produce only one of the latter.

Hungary is acknowledged to be the most sickly Climate in *Europe*, and indeed as bad as any in the World. Here it was, where the Christian Armies, in marching only through the Country, in the Expeditions against the *Saracens*, formerly called the *Croisadoes*, often lost half of their Number, from the sickly Quality of the Country; and where the *Austrians*, not long since, buried, in a few Years, above 40,000 of their best Troops, who fell a Sacrifice to the malignant Disposition of the *Hungarian Air*. — Now the same Causes, which subsist in an eminent Degree in *Hungary*, render some southern Countries so injurious to the Health and Constitution of Stran-

gers. *Hungary* abounds in Rivers, which, by often overflowing, leave that low, flat Country, over-spread with Lakes and Ponds of stagnating Water, and with large, unwholesom, putrifying Marshes. So great is the Impurity of these stagnant Waters, that by them, the Rivers, even the *Danube*, whose Course being slow, becomes in Places, tainted and stinking.

The Air is moist, and, in Summer, quite sultry. In the Nights of Harvest, it was so very damp, that we are told, * the *Austrian* Soldiers could not shelter themselves from the Moisture by a triple Tent-Covering.

Epidemical Distempers begin constantly to rage in the hottest Months, which are *July*, *August*, and *September*. These Complaints, according to the accurate Observations of a Physician † who practised long in *Hungary*, are altogether the same with those which are epidemic

* Vide. *Krameri* Observationes de Climate *Hungarico*.

† Doctor *Kramer*, Physician to the imperial Army.

epidemic upon the Coast of *Guinea*, and in the sickly Climates of the *East* and *West Indies*, viz. malignant, remitting, and intermitting Fevers, Dysenteries, and Diarrhoeas.

The Heat of the Sun in Summer, is more intense in *Hungary* (according to my Author) than in any other Part of *Europe*, and, in Proportion to the Heat, the more pestiferous the marshy Exhalations. It is constantly observed, that the nearer any City or Fort is situated to a Morass, or an ample River, with foul and oozy Banks, the more unhealthy the Inhabitants. At such Seasons, and Places, the Air swarms with numberless Insects and Animalcules, a sure Sign of its putrid and malignant Disposition.

The hotter the Summer, the more frequent and mortal the Diseases. This was fatally experienced by the *Austrians*, in the unusual sultry Summer-Months of the Year 1717, and 1718, when they found the Climate of *Hungary* a much more dreadful and destructive Enemy, than the assailing *Turks*.

In the former of these Years, at the Siege of *Belgrade*, the Fever of the Country, and the Dysentery, occasioned a very singular and extraordinary Mortality among the Troops. The Dread of these Diseases, caused every one (as may naturally be supposed) to have Recourse to different Precautions, for Self-preservation. The great Prince *Eugene*, who commanded in Chief, had Water, and the Provisions for his Table, sent him twice a Week from *Vienna*. The pure Stream of the River *Kahlenberg* was regularly brought to him : He avoided all Excesses, and lived regularly, or rather abstemiously ; refreshed himself often by eating a cool Melon, and mixed his usual Wine, which was Burgundy, with Water. But, notwithstanding his utmost Care, this illustrious Hero was seized with a dangerous Dysentery, which would have quickly terminated Life, had not the speedy Conclusion of that Campaign, permitted him a quick Retreat*.

At

* From what *Kramer* and others have advanced, concerning the pernicious Constitution of the *Hungarian* Air, we may account

At this unhealthy Season, when hardly one Imperial Officer, much less their several Domesticks, escaped those malignant Sicknesses, the renowned Count *Bonneval*, and his numerous Retinue, continued amidst this pestilential Contagion in perfect Health, to the Surprise, or, to use my Author's Words, the Envy of all who beheld him. The only Precaution he used, was to take, two or three Times a Day, a small Quantity of Brandy, in which the Bark was infused ; and he obliged all his Attendants and Domesticks, to follow his Example.

It is no less remarkable, that the *Count*, placing his certain Preservation in the Use of this simple Bitter, lived for many Years after-

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wards

count for the vast, and almost uniform Fatality of the variolous, and other pestilential Diseases, to which that Country is unhappily subject. A living and recent Author (*Westpremi, de Inoculanda Peste, 1754*) a Native of *Tockay*, observes, that their extended Solitudes, and desolated Cities, witness the dreadful Devastations made by the malignant Evils of his Soil. A Province, says he, which requires great and annual Supplies of Colonies from fruitful *Swabia*, to reinstate those whom Disease has sacrificed.

wards in the most unhealthy Spots of *Hungary*, without any Attack, or Apprehension of Disease ; and continued to enjoy a perfect State of Health, during the hottest and most sickly Seasons.—— And thus, with an unbroken and sound Constitution, which is seldom the Case of those who reside long in such Climates, he lived to a great old Age.

There is an Instance produced by the same Author *, of a whole Regiment in *Italy*, having been preserved, by the Use of the Bark, from the Attack of the same malignant Diseases, *viz.* the Dysentery and Bilious Fever (as it is often called) when the rest of the *Austrian* Army, not pursuing the Method, became greatly annoyed.

But from what has been already said, there is Reason to presume, I think, with a great Degree of Certainty, that, if his Majesty's Ships, when bound on a Voyage to any of the afore-mentioned unhealthy Climates, were supplied with a due Quantity of the Bark, it might prove effectual for preventing both the
Bilious

* Dr. *Kramer*,

Bilious Fever, and Bloody Flux, the latter being the same Disease, falling upon the Intestines.

This might be made extremely palatable, by infusing it in Spirits, especially if a little Orange-Peel be added. The Orange-Flavour renders it a Bitter of an agreeable Taste, and conceals what is offensive in the Bark. Eight Ounces of Bark, and four Ounces of dried Orange-Peel, infused in a Gallon of Spirits, will make a much more agreeable bitter Dram, than what the Sailors often make up for themselves at Sea, of Gentian, Snake-root, and other disagreeable aromatic Ingredients. — Two Ounces of this Composition, which will be but a very moderate Dram to a Sailor, may be allowed to each Man a Day, upon the Approach or Apprehension of these malignant Diseases.

It, indeed, would be still better, if the Men were to be served with only Half of this Quantity, to be taken upon an empty Stomach in the Morning, and the other Half, when they are called out to their Night-Watch.

It does not appear, to me, necessary to subjoin any Cautions * in the Use of so excellent and harmless a stomachic Bitter, taken in so small a Quantity as is here directed. A whole Ounce of Bark has been swallowed, in less than two Hours, upon an empty Stomach, by Persons in Health, without their being able to perceive from it the least sensible, much less any bad Effect †. Its long continued Use, is observed neither to offend the weakest hysteric Female-Constitution, nor to ruffle the most sensible and feeble System of Nerves and Solids in Men.

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* Where there is Apprehension of Sickness, the best Precepts, are those delivered by *Celsus*, viz. To avoid too great Fatigue, Indigestions, or Crudities in the Stomach, immoderate Cold, as well as great Heat, and Excesses of every Kind : More especially, at such a Season, the Constitution is not to be weakened, by Bleeding, and Purging, for the sake of Prevention. If at this Time the Stomach, or Intestines, are oppressed with Crudities, or sharp bilious Humours, these may be gently carried off by a Draught of Salt-water, or by a mild Laxative of Rhubarb, shunning all great Evacuations of the Body as hurtful.

† Vid. Dissert. Medic. de *Cortice Peruviano*, p. 14. Auctore Cheney Hart.

It may seem deviating from the Plan proposed in this short Essay, which is to state Facts, and not to frame Hypotheses, to offer any theoretic Opinions, concerning the Manner by which this *Indian* Drug, produces so singular and salutary Effects. However, I cannot help observing, that, by what we discover of this Bark, by our Senses and Experience, it is an agreeable aromatic Astringent, and one of the best stomachic Bitters. Hence, being endued with such Qualities, it must needs, like all other Bitters, strengthen the Stomach, and promote the Digestion of such hard and tenacious Food, as the *English* Sailors live upon at Sea; and it further prevents the Generation of that gross and viscid Chyle, which is the consequent Production of Sea-adapted Victuals. Such are certainly good Purposes, which it may answer, but the more important are these: It braces up the relaxed Fibres of the Body, (a relaxed Habit being the constant Effect of Heat and Moisture) and, at the same time, by keeping up a free Perspiration, and by main-
taining

taining a constant and equable Circulation of the Blood, and other Juices, it effectually prevents their Tendency to a Lentor, Stagnation, and Putrefaction.

These, are well known to Physicians, to be the immediate Causes, in the human Body, of putrid and fatal Distempers in hot and unwholsom Climates ; but we have the most ample Experience of the Efficacy of this Remedy, in resisting, and stopping Putrefaction. In the Small-pox, when there is a gangrenous Disposition, and in many other external Mortifications, even when that deadly Process is far advanced, this Remedy gives so powerful and sudden a Check, that it appears to be the strongest Antiseptic, taken inwardly, of any yet discovered : It is, indeed, peculiarly suitable to the Constitution in hot Climates*, as also to their endemic Diseases ; and these, its divine Virtues, were known to the Native *Indians*; long before our Arrival among them.

But to proceed. As the Weather, remote from Land in the torrid Zone, is, for the
greatest

* See the Appendix,

greatest Part of the Year, dry and serene, the excessive Heat being much moderated by a constant, refreshing, and uniform Breeze, the Men often enjoy a better State of Health at Sea, than when they arrive in Harbour, or get within Reach of the noxious Vapours, which arise from many Parts of the Land.

The particular unhealthy Seasons of the Year, the Harbours and Coasts most fatal to *Europeans*, are now generally known. Such Places, Prudence directs to be avoided; but this Expedient for Health, cannot always be complied with. Necessity often obliges Ships, to put into Ports, where Sickness may be justly apprehended; in order to guard against which, as much as the Situation of Things will permit, they ought to be furnished with some other necessary Directions.

It may, in general, be remarked, that, in sultry Climates, or during hot Weather, in all Places subject to great Rains, where the Country is not cleared and cultivated, but is over-run with Thickets, Shrubs, or Woods,
espe-

especially if there are Marshes, Lagunes, or stagnating Waters in the Neighbourhood, Sickness may be dreaded, and such a malignant Fever of the remitting, or intermitting Kind, as has been often mentioned. The Fens, even in different Counties of *England*, are known to be very dangerous to the Health of those who live near them, and still more so, to Strangers; but the woody and marshy Lands in hot Countries, are exceedingly more pernicious to the Health of *Europeans*.

When Ships are necessarily obliged to put into such unhealthy Parts, the first Precaution to be taken, is, to anchor at as great a Distance from the Shore as can well be done. — To prefer the open Sea, where the Anchorage is safe, to running up into Rivers or Bays inclosed with the Land, and especially where there are high Mountains, that may intercept the salutary Current of Sea Breezes. The higher Ships sail up the Rivers upon the Coast of *Guinea*, the more sickly they become. Such, however, as keep at Sea, beyond the Reach

Reach of the Land Breeze *, are, for the most part, pretty healthy.

It is not to be expected, that we should be able precisely to determinè the Distance, to which the Sphere of insalubrious Vapours, from such woody swampy Ground, does extend itself; as this must, at all Times, greatly depend upon the blowing of the Wind from that Quarter. Thus, at *Rome*, the South-East Wind, termed, by the *Italians*, *Scirocco*, which passes over the adjacent Marshes, is most unsalutary; and yet the Effects of this Wind, have been experienced to extend only to those Parts of the City, which lay nearest them, occasioning an epidemic Fever, whilst the rest of the City was free †.

That the Malignity of Air, which we are now relating, does often not extend its Influence to any considerable Distance, is farther proved, by manifold Experience. “ In
“ the Year 1747, when some of the *British*
“ Troops,

* Two or three Leagues at Sea.

† *Lancis. de nox. palud. Effluv. Lib. ii Epid. i. Cap. 3.*

“ Troops, partly in Camp and Cantonments
 “ in *Zealand*, suffered an excessive Sickneſs
 “ from the marſhy bad Air; inſomuch, that
 “ not a ſeventh Part of the Corps, ſtationed
 “ there, was fit for Duty: Commodore
 “ *Mitchel*’s Squadron, which lay at that Time
 “ at Anchor, in the Channel, between *South*
 “ *Beveland*, and the Iſland of *Walcheren*, in
 “ both which Places the Diſtemper raged,
 “ was neither afflicted with Fever nor Flux,
 “ but amidſt all that Sickneſs, enjoyed per-
 “ feſt Health.” A Proof, ſays the learned
 Author*, that the moiſt, and putrid Air of
 the Marſhes, was diſſipated, or corrected, be-
 fore it could reach them.

How far ſoever the noxious Vapours, from
 unhealthy Grounds, may ſpread themſelves,
 it is demonſtrable, that their Malignity de-
 creases in Proportion to the Diſtance to which
 they are diffuſed. Thus, when Commodore
Long’s Squadron, in the Months of *July* and
Auguſt, 1744, lay off the Mouth of the *Tiber*,
 I obſerved one or two of the Ships, which
 lay

* Doctor *Pringle*, in his excellent Obſervations on the Diſ-
 eaſes of the Army, Part I. Chap. VII.

lay closeſt to the Shore, began to be affected by the pernicious Vapour from the Land; whilſt ſome others, lying farther out at Sea, at but a very ſmall Diſtance from the former, had not a Man ſick. At the ſame Time, the *Auſtrian* Army, under the Command of Prince *Lobcowitz*, ſuffered ſo great a Sickneſs, through the Proximity of their Situation to the marſhy Country, that they were obliged to decamp.

The Facts which have been recited, will, I hope, induce due Attention to this very firſt, and important Conſideration, for preſerving the Health of the Men, when a Ship puts into a Harbour, where Sickneſs may be apprehended, from a low, marſhy, uncultivated Country; which is, that the Ship be berthed in the moſt airy Station, where ſhe may be well expoſed to the Sea Breezes, and, as much as poſſible, to the Windward of the Woods and Marſhes: And the ſame Precautions are to be taken, when arriving at the ſickly Season in thoſe Climates; that is, either during, or ſoon after, a rainy Conſtitution of the Atmosphere.

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The Success of Expeditions in the *East* or *West Indies*, greatly depends upon their being executed in the most proper Season of the Year ; as also upon a selected Harbour, with a Situation for the Ships open to the Wind, as one of the best Preservatives against the Maladies of a neighbouring sickly Country ; it having been often experienced, in those dangerous Climates, that riding safe from the Wind, in secure Creeks, and stifling close Havens, surrounded with interposing Mountains, has proved the Destruction of Fleets, at an Anchor, while their Cruisers at Sea, have enjoyed perfect Health.

If, in such Climates, it should happen, that there is no Possibility of avoiding to anchor close to the Land, and even in a Harbour, where the Ship is quite encompassed with Woods, Mountains, and swampy Ground, to alleviate, as much as possible, this Misfortune, some other Precautions may be taken.

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The first, that I shall mention, is — That the Crew be kept at Work upon Deck, as little as the Nature of the Service will permit, before Sun-rising, or after Sun-setting. This Advice is founded upon an Observation, that when the Sun is above the Horizon, the noxious Land-Vapours are more dispersed; they are then much rarer, than in the Night, or even in the Evenings and Mornings, when they become denser, and more apt to affect. Add to this, that the Land-Wind vigorously conveys them in a more abundant Quantity towards the Ship. Now, the Night-Air at Land, in those southern Climates, is always very moist, occasioned by the excessive Dews; and these Dews are experienced to be extremely pernicious to such Persons, as are exposed to them. But, altho' we may suppose the falling Dews to be impregnated with unfavourable Exhalations, from the Earth or Land-Air, it is nevertheless certain, that extreme Moisture, greatly favours the Exertion of their unfriendly Influences.

That

That an impure Air has an Effect in proportion to its Moisture, upon the Health of the Men, and even upon the most hardy Constitutions, would appear by the following curious Experiment.

In the Year 1748, upon the breaking up of the *British* Camp in *Flanders*, the Cavalry were cantoned in the unhealthy Ground about *Bois-le-duc*, and soon after were attacked with a very general Sickness, occasioned by the late Inundations of that Part of the Country. Dr. *Horne*, then Surgeon to *Cope's* Dragoons, observes *, that the Troops suffered in Proportion to their Proximity to the Marshes, and that universally, the nearer to *Bois-le-duc*, the more violent was the Distemper : The Number of the Sick, by a very accurate Observation, being found exactly to correspond with the Dampness of their Situation, and of the Air. To put this Matter beyond all doubt, this ingenious Gentleman provided

* In an elegant Performance, entitled ; *Dissertat. Medica inaug. de Febre remittente*, p. 14, &c.

provided himself with a good *Hygroscope*, by which, he carefully measured every Day, the Degree of Moisture or Dryness in the Air ; and, upon comparing his Tables with the Register kept of the Sick, he found, that the Progress of the Disease, kept an exact Pace with the Humidity of the Air.

On the 29th of *June* they left the Camp, and from that Day to the 12th of *July*, the Air being dry, not one Soldier was affected with an Ailment. On the Evening of the 12th, the *Hygrometer* indicated a great Degree of Moisture in the Air, and that very Night, the epidemic Sickness (*viz.* the remitting Fever) began among the Troops ; three Dragoons of *Cope's* Regiment being seized with it. During eight Days afterwards, the Air continued extremely moist, and the Number of the Sick was proportionally increased. The ten following Days being drier, the Number of the infected visibly diminished. But two very moist Days succeeding, the Patients were again greatly encreased. In a Word, the same Quality of the Air, which
differently

differently affected the Instrument, did also every Day in like Manner, affect the Health of the Men.

When a Ship at Anchor is near marshy Ground or Swamps, especially during Summer or in hot Weather, and the Wind blows directly from thence, the Gun-Ports, which would admit such a noxious Land-Breeze, ought to be kept shut. Or if the Ship rides with her Head to the Wind, a thick Sail ought to be put upon the Fore-mast, along which, the Smoke from the Galley might be made constantly to play and ascend. If the Sail should occasion a little salutary Smoak between Decks, this Inconvenience will be sufficiently compensated, by its keeping off the full and freight Stream of the swampy Shore-Effluvia, which now being obliged to form a Curve, before they reach the after Part of the Vessel, must needs be greatly diverted and scattered. At such Seasons, the Men may be enjoined to smoke Tobacco, and the Carpenters to fumigate the Ship often with the wholesom Steams of Pitch or Tar.

'Tis constantly experienced, that the greatest Sufferers in unhealthy Harbours are the Boats Crews, and such, as being employed in the necessary Business of wooding and watering the Ship, are obliged to sleep on Shore. That the Men, on these Duties, are so suddenly and universally seized with Sickness, is commonly ascribed to their Intemperance, or their being wet in the Night, with Rain, from the Insufficiency of their Tents, &c. But the Truth is, their nearer Approach to the unwholesom Land-Air, and especially their sleeping in it, are the real Causes of their being infected. This is demonstrable from the Nature of the Malady, which they contract, which is very different from the Effects of Drunkenness, or of a common Cold, and is constantly the peculiar endemic Disease of the Country. One great Means then of the Safety of the Men, which are employed on Shore, would be to relieve them often, and to permit none to sleep in the Tents. Centinels should be placed with a Midshipman at the watering Place, and strictly charged to prohibit

hibit Sleep ; for in Sleep, (a State of general Relaxation) there is the greatest Danger from the unwholesom Air. This is a Thing so well known, that, although *Rome* be of ample Compass, yet of its many Inhabitants, there is scarce to be found one of the better Sort, who, during Summer or Autumn, would venture to sleep a Night at *Ostia*, or in the Neighbourhood of the Marshes, adjoining to the City. Persons often recreate in the Day, and hunt in the unhealthy Parts of the *Campania*, but they are sure to return to the City before Night ; the fatal Experience of many, having sufficiently taught them the Danger, of sleeping in those Nurseries of Disease *.

I remem-

* It has been an ancient received Maxim, that to rise early, was greatly conducive to Health. This, in a qualified Sense, is true. The Practice implies, Regularity the preceding Night ; and, in dry and lofty Situations, the Propriety of this Adage will the best appear. But woody, marshy, and low maritime Places, with those subject to Inundations, are manifest Exceptions to the Rule. The Inhabitants of such Districts, if they would secure themselves from febrile and other consequent Attacks of their raw and uncorrected Atmosphere, should wait the Sun's Appearance in, if not his Advance above, the Horizon,

I remember in the Year 1739, when Admiral *Haddock* arrived with the Fleet under his Command in *Mahon* Harbour, a Midshipman and eight or ten Men from each Ship, were ordered to remain on Shore, with the Coopers at the Watering-Place, to refit and fill the Water-Casks. This Watering-Place was in a Creek of the Harbour, well known by the Name of *English-Cove*. Here the Men found a very large artificial Cave, dug out of a soft sandy Stone, sufficient to contain their whole Number. Their Hammocks and Bedding were directly carried thither, and it being in the Summer-Months, the agreeable Coolness of the Retreat, was deemed by them all, highly refreshing. But the Consequence

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rizon, before they attempt the Business of the Field. To select a domestic Instance, amidst a Variety producible on this Occasion, take that of a Clergyman of long Observation in such Matters, who has assured me, that few of the Farmers, reputed early Risers in his Parish, which is near the level Coast of *Holderness*, live to be old. Defluxions on the Breast and Lungs, Rheumatisms, Intermittents, and the Diseases of a debilitated Tone of Fibre and slackened Perspiration, are the entailing Evils of their mistaken Conduct.

was, every one who slept in this damp Place, became infected with the Tertian Fever, then Epidemic in *Minorca*; of which not one in eight recovered. Most of the Coopers belonging to the Fleet, were at this Time cut off by it. Whilst at the same Time, the Men on board the Ships, who lay close almost to the Shore, were free from Complaint. And others, who were ordered upon the same Duty of watering the Fleet, in the Place of those who were taken ill, enjoyed likewise a perfect State of Health, by being obliged to sleep every Night in their respective Ships.

As for those who must of necessity remain on Shore, and sleep in indisposing Desarts, and uninhabited Places, some farther Directions should be added for their Use.—They must take care not to sleep upon the Ground exposed to the Dews, but in Hammocks in a close Tent, standing upon a dry Sand, Gravel, or Chalk near the Sea-Shore, and where there is no subterraneous Water for at least four Feet below the Surface of the Ground. The Door of this Tent should be made to open
towards

towards the Sea, and the back Part of it, which receives the Land-Breeze, must be well secured by double Canvas, or covered with Branches of Trees. When the Air is thick, moist and chill, the Earth being overspread with cold Dew, a constant Fire must be kept near the Tent, as the most excellent Means of purifying such unwholsom Air, and of preserving the Health of those, who either sleeping or waking, are exposed to its Influence. The Centinels who guard the Water-Casks, ought likewise at such a Time to have a Fire burning near them. All old and forsaken Habitations, convenient Caves, and natural Grottos in the Earth, where the Men may be induced to take up their Abode, must, before their Admission, be perfectly dried and purified with liberal Fires ; likewise every Person should be made to observe the necessary Document of warmer Clothes and Coverings, as a Defence from the chilling nocturnal Air.

Let all who value their Health, also have recourse upon these Occasions, Evening and

Morning, to a Dram of the bitter Infusion of Bark : Or, if this cannot be procured, they may use a moderate Dram of Garlic-Brandy. Expositions to the too great Heat of the Sun, are carefully to be avoided.

Those Seamen or Officers, who are employed on Shore, may be allowed to indulge themselves in a more plentiful, tho' moderate Use of Vinous or Spirituous Liquors. In Ague-producing, hot, and intemperate Climates, a light Dinner, but a more hearty Supper, with a Glas in the Evening, will not be amiss, for such as have been accustomed to free living.

This is the Sum of what I have to offer, as most likely to prevent the Generation of Sickness in his Majesty's Navy. But as it is proper to be provided against the worst that can befall, it is to be observed further.—That as soon as malignant, continued, remitting or intermitting Fevers, and Fluxes, make their Appearance at Sea, in close, hot and moist Weather ; or, are contracted by the insalubrious

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ous Air of a low, woody, marshy, sickly Country; a Tendency to Putrefaction seems to be induced in the animal Humours*; and at such Seasons, these Diseases are almost always to be suspected as infectious, more particularly the Bloody Flux. And then it is, that the speedy Progress and frequent Mortality from such Distempers in a Ship, are for the most Part, more owing to Contagion, than to the Influence of any other Cause: The Air being more vitiated by the Diseased, than it possibly can be by any other Means. The

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Clothes,

* Heat and Moisture become, when joined, the Parent of Putrefaction; to which, if we add imprisoned animal Steams, we perhaps form no imperfect Idea, of the efficient Cause of that Sickness, which generally prevails in large new-built Ships; and however simple, the Investigation may be, the Analogy it bears (the aggravating Circumstance of diseased Perspiration excepted) to all experienced sickly Climates, seems abundantly to confirm this Solution. Those who have seen the Effects of unseasoned Timber on board, will not think the Quantity of Vapour arising from the sappy Wood, trifling or innoxious. Thus, especially during Night, we, as it were, realise the baneful Dews of the torrid and other indisposing Climates, and create that very Constitution of Air, whose consequent Diseases, prove so often fatal to our Fleets.

Vide, Page 20.

Clothes, Linen, Beddings, and various Utensils of the Sick, are apt to imbibe and propagate Contagion. And the Air of the sick Berth, when in a close unventilated Place, becomes often so highly tainted, that I have known six Nurses infected by it, in less than twenty-four Hours. Hence, also, often proceeds the uncommon Malignity and Mortality occasioned by Fevers, which we sometimes hear of in Ships. — There being Instances, where a Ship's Company have suffered as much in Proportion to their Number, by a Fever having acquired a high Degree of Malignity and Contagion from polluted Air, as any well-aired City would probably suffer by a Visit from the Plague, owing to a constant *Fomes* of Infection, kept up in the Ship, from the want of due Precautions.

Thus it becomes a Matter of the utmost Consequence, to put in Execution, all proper Methods for early stopping the Infection, and Spreading of such Diseases; if any should unfortunately occur in a Voyage, as are plainly contagious, — To deliver a few
Rules

Rules for that Purpose, was the second intended Branch of this Essay.

S E C T. II.

Rules to be observed for putting a Stop to the Spreading of contagious Diseases.

A Point of great Importance, upon which the Recovery of the Afflicted, and the Preservation of the Whole, will in a great Measure depend ; is having a well-aired Berth, for the Patients ; where a constant Supply of fresh Air may be procured them : As also a quick Diffipation of their morbid Steams.—The Use of Ventilators must at all Times greatly contribute to general Health in a Ship, but upon this Occasion, they become indispensably necessary.—’Tis true, that when once a highly contagious or pestilential Fever, has invaded the Crew, the freshest Air will not remove it ; but then proper Ventilation greatly abates its Malignity, lessens the Mortality, which would otherwise be occasioned,

and by carrying off and dissipating the contagious Effluvia of the Sick, becomes a great Means of preventing its further Progress.—Another very material Advantage, derived from a constant Renewal of the Air, is, that in many Instances, this will prevent common Fevers, attended with no great Degree of Contagion, from degenerating, into what is called the Goal or Hospital Fever, which is always to be apprehended, when there is a great and general Sicknefs on board. In every Part of the World, this Fever may be quickly generated by the Effluvia of a Number of People, closely confined, more especially of such as labour under Fevers and putrid Distempers. Now the Consequence is, that when this Contagion is once bred in an Hospital or Ship, all other Fevers, Fluxes, and other Diseases, however mild, are quickly converted into its Pestilential Nature. I call it Pestilential, as it is malignant and contagious nearly in as eminent a Degree, as the true Plague, tho' effectually prevented and more easily cured in a pure Air: And because it has so often
proved

proved fatal to many excellent Seamen, and their Attendants, the Surgeons, Nurses, &c.

Let us but reflect, that one Man in Health, pollutes a Gallon of Air in a Minute, and by breathing, renders it unfit for the Purposes of Life. This is found to be the Case, by those who dive under Water, as by various other Experiments, and evinces the absolute Necessity of its constant Renovation. But more especially to Patients confined in Bed, as there is not any thing more refreshing, than the cool Air to the parching Lungs, or more essential to their Recovery, than the breathing of a pure Medium, in every Species of Situation and Complaint*.

The Place commonly allotted for the Sick, is either the fore Part of the Gun-Deck, called the Bay, which is the most damp and unwhol-

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* Animals, even the most tenacious of Life, and those, whose Existence is found to depend the least on Air, sooner expire in Air made foul, than in Vacuo. Plants sooner suffer and droop beneath the Influence of noxious Steams, than in a want of this all vivifying Fluid.

fom Part of a Ship ; or what is nearly as bad, and very incommodious, the fore Part of the Hold. Both these confined Places, have too often proved a Seminary of Infection to her whole Company. If the Nature of the Service would permit, whenever the Dysenteric or Tertian Fever, or other infectious Disease, more especially the Hospital Fever, is apprehended, the most proper Place for the Sick in warm Weather, or in a hot Climate, is under the Forecastle. They might there be sufficiently defended from the Rain or Damps, by having Canvas hung round them ; and by this Means all the Parts of the Ship below, would be kept sweet, clean and wholsom. If under the Forecastle should be apprehended too noisy, and indeed sometimes noisome from the Stench of the Hogs and Privies, or deemed improper as the Kitchen of the Ship, or otherwise thought incommodious from the wet and jolting Rebukes, it meets with in stormy Weather ; it is to be recollected, that this Advice is proposed only to take Place on pressing Occasions, in a hot and calm Season, when no other Device can be exercised, or Opportunity had,

for

for seperating the Sound from the Infected, with equal Advantage.

But supposing this Place is found to be inconvenient, from the Number of the Sick, or their incommoding the working of the Ship, &c. the Patients ought then to be removed into the Gun-Room, for the Benefit of that salutary Draught of Air, which may be constantly procured them, by keeping open the Gun-Room-Ports. There is but one Objection that can well be made against this Step; viz. the Inconvenience which may arise from it, to the Officers who eat and sleep in that Part. But how trifling must this Objection appear, when offered against the most proper Means of preserving their own, and many other Lives? It ought to be considered, that the Necessity of taking this Method, will but rarely occur. Many Ships continue for Years as healthy in the *West-Indies*, as they would do in *Portsmouth* Harbour, especially, after being seasoned a little to that Climate.

There

There is seldom Occasion to remove the Sick in a Ship, from their proper Beds, into one Place ; and it is done only, when their Number is encreased, so as to make it inconvenient for the Nurseries, to attend them in separate Parts. Now after this Step is first taken, and a proper Berth between Decks, or in the Hold, has been provided, where the Ventilators have been used, and yet notwithstanding this, by Reason of the Encrease of the Sick, the Progress of the Mortality, and the plainly contagious Nature of the Disease, more Air, and a speedy Removal from an infected Berth, is found to be absolutely requisite ; I believe, there are few Officers in the *English* Service, who would not willingly quit their Habitation in the Gun-Room, for the Benefit and Preservation of the Men. And this is only to be done, until they arrive in Port, and the Diseased are landed.

Let it be remembered, that if the Hospital Fever is in a Ship, Officers have no Security against it, by sleeping in the Gun-Room ; on
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the contrary, if they are permitted Hammocks in the Steerage, they are there much safer. The absolute Security of all on board, does indeed entirely depend upon a Stop being put, without Delay, to the Progress of the Contagion.

'Tis further to be recollected, that such airy Places as the Gun-Room, by the Methods hereafter mentioned, are much easier, and more affectually cleansed of all Infection, when the Diseased are once removed, than the other less airy and constantly damp Parts of the Ship.

Too much cannot well be said, to conquer the Prejudices of the Ignorant, who are unacquainted with the pernicious Effects of confining Patients, labouring under a contagious Illness, in a foul stagnating Air. In such a Case, the Malignity of the Fever, hourly acquiring Strength, from the pent up Steams of the Diseased, proves unconquerable by the most powerful Alexipharmic or Febrifuge Remedies. The Nurses, Surgeon and his Mates, cannot

cannot well escape, and are often in their Turn, infected with it. Even those, who at first have had the good Fortune to recover, have no Security against a Relapse, their Continuance in such a tainted Air, will almost certainly effect it.—More Danger is doubtless to be apprehended to the Sick, from breathing in an Air polluted with their own and the Effluvia of others, than from any Degree of Cold, which can well be admitted by fresh Air *.

When a great Number are crowded in the Gun-Room, they will require the Ports to be open

* How exact the Ancients were in this important Point, needs but little Illustration. The Introduction of refreshing Nosegays and cooling Evergreens, in the Apartments of the Sick, with antiseptic Sprinklings, aromatic Fumes, and Admission of Air, stand recommended on Record, under the most beneficial Experience. Their Climates indeed generally speaking, if intemperate, became so, through Heat, consequently the Practice was more evidently rational. But an occasional Conformity ought to be admitted in all Climates. Those to whom we more particularly address our Cautions, have, upon the Principle of Heat, more cogent Reasons for pursuing the Practice, since the Moderns visit Regions, the others but faintly guessed at, and our Fleets often dwell in that Country, which they had pronounced, *non habitabilis Æsæ*.

open Day and Night, only it may be requisite to have Canvas-Shutters, to prevent too much Cold in bad Weather. It is here taken for granted, that the Patients are duly supplied at this Time, with sufficient clean, and, if necessary, warm Bedding.

This Apartment assigned to the Sick, ought to be kept free from all Incumbrances of Chests and the like; as also of Crowds of People. It must be washed out every Day with warm Vinegar, sprinkling the Sides of the Ship, and the Beams above the Hammocks. All possible Care must be taken during this Operation, that the Patients are not kept too close or stifled up. Heat, is always to be suspected of dangerous Influence in infected Places; and therefore, every Method is to be used at this Time, to render the Men in their Beds, agreeably cool. The Utensils of the Sick ought also to be washed or sprinkled with Vinegar, especially the necessary Buckets, when the Men are afflicted with the Dysentery. In this Case, the Buckets immediately
after

after using; must be washed, and afterwards have warm Vinegar poured into them.

For further Security, frequent Fumigation is also requisite, as a necessary Means of the more certain Purification or Emendation of the Air. The Fumes of camphorated Vinegar, of Nitre, of Pitch, Tar, and the like, will be found serviceable, especially the former. But what I would chiefly recommend, as by far the best Method, is to burn two or three Times a Day in different Parts of the Ship, a small Quantity of Gun - Powder, secured in a proper Vessel. But more of this hereafter.

With regard to those who are diseased, much will depend upon their being kept as clean as possible. Filthiness being a great Source of Infection, and Cleanliness an excellent Preservative. The less cleanly, may have their Hands and Feet washed with a little warm Water, Soap and Vinegar. When their Linnen becomes foul and stiff with sweating, they ought directly to be shifted, and
after

after fumigating such foul Linnen with Smoke of Brimstone, they should be soaked in Vinegar, and washed. Dry fresh Bedding, is a great Comfort to sick Persons. Every Bed, as soon as the Patient is recovered so far as to be able to get out of it, should be carried upon Deck, and there be well aired, dried and beat by his Mess-Mate.

This Regulation enjoined by the Commanding Officer, ought to take Place every Day at Noon, when the Weather will permit, *viz.* That all the empty Beds in the Hospital, be carried upon Deck and well aired. Some Sailors, from a natural slovenly Disposition, and others, when weak after Illness, are apt to be very remiss in this Point of Cleanliness, which however it ought not to be in their Power to neglect. Such Beds as are observed to be quite spoiled and rotten, must be destroyed, and supplied by issuing out new ones to the Men. As ought likewise, the Beds of all those who have laboured under the Dysenteric Fever, because the Bedding in this and some other Fevers, and indeed most

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Substances of a loose, spongy Texture, such as Wool, Feathers, &c. do strongly retain, and are apt to communicate the Contagion afresh.

The Sick are to be placed at a convenient Distance from each other, so as not to be too much crowded. Those who have Fluxes, putrid Sores, scorbutic Ulcers, and the like offensive Ailments, (which in a confined Place are sufficient of themselves to pollute the Air, and to generate a contagious Fever) are to be put in the next airy Place of the Apartment; or rather removed into a separate Berth, under the Forecastle. Such as are under a Salivation for Venereal Diseases, are not to be admitted into the sick Apartment. Nor, is this Place to be crowded with Men, labouring under any slight Complaint, or indeed any other Disease, than the reigning Epidemic one, if this be infectious.—Dead Bodies ought without Delay to be removed upon Deck, and the Bedding and Body-Linen of the Deceased, to be thrown into the Sea. The best and sweetest Water in the
Ship

Ship should always be reserved for the Use of the Sick, especially in putrid and Dysenteric Cases*.

The next thing to be considered, are the Means, by which particular Persons, may best defend themselves against Contagion; and it is upon this Occasion, that a Glas of the Bark-Bitter taken once or twice a Day, upon an empty Stomach, will be found an excellent Preservative against Sicknefs and Infection.—This, may be presumed from what has been already said, and has further been confirmed by repeated Experience in like Cases. Few have had more Opportunities of knowing the Hospital Fever, none has described it better, than the learned Doctor *Pringle*; to whom the World is greatly indebted for his excellent Observations on that, and many other Diseases, incident in a great Measure to the Fleet, as well as to the Army. This Gentleman, by a lucky Accident, discovered the

* For more particular Directions concerning the Treatment of the Patients on board of Ships, See Dr. *Lind's* Treatise on the Scurvy. Part II. Chap. 3.

the Efficacy of the Bark in this Malignant Fever. “ * Even after the Recess of the Fever, the same Medicine (*viz.* a Decoction of the Bark and Snake-Root) being continued in a smaller Quantity, not only served as a Strengthenener, but likewise as a Preservative against a Relapse, whilst the Patient remained in the Hospital.” These Observations, which perfectly agree with what other Practitioners, particularly the learned Doctor *Huxham* † remarked in like Cases, are now added, as corroborative Proofs of the preservative Virtues of the Bark. And I further recommend it to the Trial of all Nurses and Attendants on or about the Sick at Land, for their proper Security against Infection. We often

* Observations on the Diseases of the Army.

† I cannot but upon this Occasion recommend to the Surgeons of the Royal Navy, the Perusal of the following excellent Books, *viz.* All the Writings of Dr. *Huxham*, particularly his Essay on Fevers, and Dr. *Pringle*’s Observations on the Diseases of the Army ; in both which, they will find the Hospital-Fever accurately described. For the remitting Autumnal Fever of hot Countries, they may consult *Cleghorn* on the Diseases of *Minorca*, Dr. *Grainger* de febre Anomala Batava, and likewise Dr. *Pringle*’s Observations.

often observe a Fever to run thro' a whole Family, and even the next Neighbours to become infected by it, the Precautions here directed, together with the Bark, are the best Preservatives I know.

For additional Security, as in an Affair of such Importance, nothing should be omitted; the Surgeons for their own proper Preservation, must take care never to visit the Sick when their Stomachs are empty, the Body being then in an absorbing State. The like Precaution is to be taken by the Nurses. Smelling Bottles of camphorated Vinegar have been recommended, where there is Danger of Infection. A Sponge dipt in Vinegar may at least be used by those, who dress foul Sores, Mortifications, and the like, and especially at the Time of bleeding of a Patient, as it has been observed, that upon such an Occasion, there is more than ordinary Risque of receiving the Disease. Washing the Mouth now and then with Vinegar, swallowing a little of it before and after bleeding, and visiting the Sick, and keeping a proper Suit of Clothes for
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the Purpose, which are usually made of Canvas, are Precautions which may prove serviceable. Vinegar and Garlic, no contemptible Preservatives, should at this Time be served to the Men, by way of Sauce for their Salt-Meats. Furnishing them also with Pipes and Tobacco, and making them smoke freely, has been a Method often practised with Success in different Ships.

'Tis observable, that the Perspiration and Sweat of the Patient, are infectious in many Fevers, but especially the Breath of a dying Person, and all Fevers are esteemed to be most contagious towards their latter end. Swallowing the Spittle in infected Places is justly deemed a Means of sooner acquiring the Taint. Upon which Account, neither the Nurses nor any one else, should be suffered to eat in the Hospital. The Wine, before directed to be reserved for the Use of the Sick, will at such a Season be found extremely beneficial, not only as the best Medicine in certain Stages of the Fever, but as an excellent Strengtheners and Preservative of the Convalescents.

lescents. All spirituous Liquors moderately used, as also Lemons, are approved prophylactics against Contagion. Wine is perhaps inferior to none of these*. If it is found inconvenient to serve the whole Ship's Company with Wine, their Allowance of Punch (made as before directed) may be encreased. Or if this cannot well be done, the Nurses ought at least to be permitted such a Quantity, more than their ordinary Allowance, as may be judged reasonable to prevent their Sickness, without endangering their getting drunk.

It will import much to the Health of all the Attendants about the Sick, that they keep both themselves and their Patients perfectly clean, and free from Filth and Nuisances, a Rule of great

* A Glass of Wine, with the Juice of half a Lemon, and Sugar, taken before visiting or bleeding the Sick, I recommend as an experienced efficacious Preservative, against Contagion in infected Places. It is usual with some, for preventing their swallowing Spittle, to put Tobacco in their Mouths when attending about the Diseased; but those, who are in constant Use of chewing that Plant, are apt to let down Part of its Juice with their Saliva. I would advise such Persons, to use a Slice of the Root of Calamus Aromaticus, dipt in Vinegar.

great Consequence in a Ship. If the Nurses wore painted Canvas-Jackets, they would be less liable to carry about Infection, and the like Method should be taken with their Linnen as has been directed for those of the Sick. I must add, the most chearful and willing Fellows ought always at such Times, to be preferred as Attendants on the Diseased. Grief and Fear, being experienced greatly to dispose the Body to receive Impressions, which Mirth and Gaiety might resist. Universal Chearfulness, good Humour, and entertaining Amusements, with moderate Exercise, should be enjoined and promoted by the Officers on board. Great Fatigue of Body, Irregularities of every sort, especially Surfeits and Drunkenness, as also long Fasting, ought carefully to be avoided, especially at such a Time, as we now suppose.

Upon the first Appearance of Sickness in a Nurse, which may be judged to have arisen from his attending in the sick Berth, he is not immediately to be confined there, or to have his Hammock hung among the rest ; as I have observed

observed some Instances, where sudden Infection from bad Air, has gone quickly off, upon having the Benefit of the pure Air, or by Means of a gentle Vomit, a thorough Sweat, or the like.

It remains for me to lay down, a few of the most proper Directions for purifying the Ship, and preventing the latent Seeds of a contagious Fever, from breaking out again, after all the Sick, upon the Ship's Arrival at Port, are sent away to the Hospital. These are the more needful, as Experience in some Ships has shown, that the getting quit of their Sick, has not always cleared them of their Infection.

On the first good Day, after the Diseased are removed, together with their Clothes; all the Chests and Bedding must be ordered upon Deck. — There, the Chests are to be opened, and the Bedding spread out; taking Care, that whatever is of Cotton, Wool or Feathers, be well dried and beat, and that no Folds remain unexposed to the free Air. A

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little

little Wind upon this Occasion, will be serviceable: At the same Time, the Quarters of the Men below, are to be washed out by Means of the Fire-Engine, if there be one on board. This Engine, by throwing the Water with a considerable Force against the Sides of the Ship, cleanses the several small Holes and Crevices of the Timbers, much better than the Hand-Buckets. — Every Hammock in the Ship ought now to be well washed and scrubbed in the Sea Water ; as also the Men's Chests, which are often very offensive, from the Remains of rotten Cheese, mouldy Bread, and other Articles of their Provisions.

This first necessary Step of Cleanliness being premised, every Part of the Ship must afterwards be washed out with warm Vinegar. It may be done by the most lazy, indolent, and less cleanly Fellows, such as have either recovered of the Sickness, or may be deemed liable to it from a Neglect in point of Cleanliness: The old Clothes of those Persons are at this Time, either to be destroyed or purified with Vinegar, &c.

All this being duly performed, makes way for the last Operation, which is the Burning of Gun-powder. I will venture to affirm, that of the many Fumes recommended for the Emendation of the Air, and the Purification of infected Places and Substances, none are more effectual to eradicate an Infection out of a Ship, or indeed any other Place, than the confined Smoke of Gun-powder. This I affirm from Experience, without laying any Stress upon the different Materials, Sulphur, Nitre, &c. which enter into the Composition of this salutary Vapour. The Manner is this :—All the Chests, Clothes, and Bedding of the Men, are to remain below, the Ports, Hawse-holes and Hatch-ways, must be kept close shut, (and if the Powder is on board, proper Care must be taken to secure the Powder-Room) mean while, a Person sets Fire to small Quantities of Gun-powder at a Time, in different Parts of the Hold, and between Decks.—A Train may be made, by wetting the Powder with a little Vinegar, and putting this, in the Bottom of an old Kettle or Sauce-pan, sprin-

kling also some loose Powder about it. This Sauce-pan may be secured, by standing in a deep Bucket or a Tub of Water. And that Precaution, together with the Burning of but very small Quantities at a Time of loose Powder, will effectually secure against the least Danger.—The Operation is to be repeated, as long as the Operators below can stand the Smoke, (which by the by, is quite harmless to the Lungs) and, until the Hold and all the Parts between Decks, are sufficiently replete with it.—They ought to set Fire to their last Train, just as they leave the Gun-Deck in ascending the last Ladder, when the Hatch-way, by which they came up, is without Delay to be shut, and, like the others, well covered over with a tight Tarpawling. The Smoke must be confined below for at least two Hours, until all the Contents of the Ship, the Timbers, Bedding, Clothes, &c. are sufficiently penetrated and purified with this antiseptic Vapour.—The Hatch-ways are afterwards to be opened, and a Spring being put upon the Cable, the Hawse-Holes are to be brought to the Wind; so that by this Means, the Ship

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(having her Gun-Room-Ports thrown open, or whatever else will encrease the Current) may receive a full Stream of fresh and wholesom Air, throughout her darkeſt Recesses, which ought also to be well purified, by playing of the Ventilators.

I observed I had Experience of the Efficacy of Gun-powder ; and, indeed, I have known some sickly *Guinea* Ships, perfectly purified and rendered wholesom by the Smoke of it, when other Methods had been tried in vain. I must now add, that in all contagious Diseases and infected Places, or Chambers of the Sick at Land, it is a most excellent Purifier *.

If the Vessel is annoyed with Rats, Mice, or Insects, usual in the *West-Indies*, such as Ants, Cock-Roaches, Weevils, and those of

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* The Smoke of Gun-powder contains a true Hepar Sulphuris, the Fume of which is perhaps the most penetrating Vapour in Nature ; as is evinced by the Experiment of making with it, the Sympathetic Ink. It is not only surprizing subtil, but so extremely diffusive, that when Hepar Sulphuris is prepared in close Apartments, the Effects are plainly perceived in the neighbouring Houses.

the Beetle Kind, which encrease Impurity, particularly in the most important of Articles, the Food ; the Burning of Sulphur may afterwards be practised, Care being taken to extract the sulphureous Air, before the Men are permitted to go below. Or in case she is new, and her Timbers are damp, dried Herbs and Woods, such as Juniper and the like, may be kindled upon the Ballast in the Hold.

In so serious a Matter, indeed, too many Precautions cannot well be taken, to accomplish the entire Purity of a Ship. When the Nature of the Service therefore will permit it, a sickly infected Ship, ought to remain at least, thirty Days in Port, in order to judge of the future State of the Men's Health. None who have laboured under a Fever, should be received on board of her, for at least fourteen Days, after their perfect Recovery, as one Person, tho' seemingly well, may perhaps be the Occasion of again introducing a general Sickness.

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I must add, sound healthy Ships, ought to be extremely cautious upon this Head, of what Men they receive from infected Hospitals, or from sickly Ships. For want of this Precaution, many have suffered. To produce one, from several Instances. — I remember in the Time of the late War, upon the Arrival of a Dutch Man of War at *Spithead*, from the *West-Indies*, that two *English* Men on board of her, petitioned they might be taken out, as being *British* Subjects, and willing to serve in the *English* Fleet. Their Request was presently granted, and accordingly they came on board one of our Ships, without having any Appearance of Sickness; but next Morning one of them was found in a Fever, and the other dead in his Bed. This Fever turned out to be highly contagious, and annoyed our Fleet for some Time afterwards. — I have mentioned this Fact, to enforce the Necessity of proper Precaution, and to evince the Importance of many Directions which have been here delivered.

With regard to Naval Hospitals, two Things I conceive may prove beneficial.

First, it should be ordered by a Regulation in the Navy, that when a Ship arrives from a Cruize or Voyage, having either a malignant, Pestilential Fever, the dysenteric Fever, or any other Disease on board, which is plainly contagious, that, in this Case, the Captain or Surgeon is to acquaint the Physician, Surgeon or Director of the Hospital, with their Condition, previous to the Landing of the Sick, that proper and distinct Wards may be prepared for their Reception.—The ordinary Method has been, that as soon as the Ship is brought to an Anchor, the Sick are often sent on Shore, in the first Boats, to the Hospital, and are dispersed into the different Wards, according as the Beds are found empty, without the Surgeons being informed of the Nature of their Disease, till he receives the sick Ticket, which is carried along with them.

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As I have hitherto endeavoured to support, by Facts, what has been advanced, so I cannot but observe, that, for want of this proposed Regulation, more than once it happened, during the late War, that a few Men, put on Shore from a foul Ship, have introduced a Contagion into an Hospital, containing a thousand Sailors. — This was the Case both at *Gibraltar* and *Mahon* Hospitals, where the Fever diffused itself so, as to endanger the Inhabitants, and especially the Garrison of the former Place. Nay more, these Hospitals became a Seminary of Contagion, to the whole Fleet, as I experienced in a very healthy Ship, the *Kennington*, where, by taking on board but one recovered Man from the Hospital, the Fever was introduced among us, and afterwards exerted its Contagion for six Months.

The other Regulation is a Consequence of the former, *viz.* — That in all Hospitals, there should be separate Wards, allotted for diffe-

rent Diseases. As no Man ought to be received into the Hospital, without the previous Inspection of the Surgeon, so it must be his Business to appropriate Places to each ; and in Case of the Arrival of a Ship, with a contagious Fever on board, as above-mentioned, he is then to prepare distinct Wards, for the Reception of the Men ; and to use all proper Methods, for preventing the Contagion, from affecting the rest of the Sick.—Many Precepts for this Purpose have been already delivered, so that I shall only say, the foul Wards in an Hospital, ought always to be the most airy ; and, where the Contagion is eminently malignant, spacious airy Tents, built in the Fields adjoining, are greatly preferable to any Ward or Apartment, for dissipating Infection, and for the Recovery of the Diseased.

When the Hospital Fever, in the late War, was brought from *England*, into the Hospital at *Mahon*, the House being found insufficient for the Reception of so great a Number of Patients, Tents were reared up in the Fields,
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for many of the Men. These poor Fellows were thought to be badly accommodated, but it was very observable, that most of those, who lay in the cold Tents, recovered; when the Mortality in the House was so great, that in some Wards, not one in three escaped.

Thus I have drawn a Picture at full Length, of the Mischiefs that may possibly flow, from want of due Care and Circumspection, with a View, to excite the Attention of such, as might be supine in Matters of so serious a Concern. The Province has been mine to deliver Precepts; the Power is in others to comply; and if the Expedients proposed, are thought by some, either too numerous or troublesome, let it be remembered, that to oppose the various besieging Evils, to which our Fleets, and consequently the Safety of these Kingdoms, stand exposed; we should, with united Efforts, attempt to intercept every Reinforcement, which may tend to strengthen Disease. For with every Chance and Assistance on the Side of human Art, the ordinary Counter-

Counteraction of Noise, Motion, crowded Numbers, and the comparative Want of Accommodations, will ever render Indisposition aboard, a much superior Calamity, to similar Diseases ashore. Hence the Duty, and the incumbent Task, in becoming in this precautionary Tract, so circumstantial and minute. — But it is full Time to dismiss these Scenes of Lamentation, and glance to what may afford, some Portion of Comfort and Encouragement.

The Seamen, on board his Majesty's Ships of War, have not only a fuller and more wholesome Diet allowed them, than in any other Service, but, also an excellent Provision of the most proper Necessaries of all Sorts for the Afflicted.—Their Surgeons in general are now well qualified, and the Sick have at all Times, a sufficient Number of careful Nurses, to administer due Assistance in their Distress. They are likewise, commonly less crowded with Men, than foreign Ships of War; and in every Respect, better provided with Assistance, and all the necessary Comforts in Sickness,

than

than Merchant Ships can possibly be. Hence it is, that, in Proportion to the Number of Men on board, they are often much healthier; for, from the *Guinea* and *West-India* Traders, the King's Ships, have sometimes contracted their Sickness.

In the Merchant's Service, the Condition of the poor Mariner, when at Sea, is often much to be pitied, where he is destitute of proper Advice and Assistance, and even of such Necessaries, as might afford a present momentary Relief, and render his Affliction more tolerable. — In many Cases, when in Harbour, the Men are obliged to expend a great Part of their Wages, for a Cure; which, in his Majesty's Service, they might have compleated by some of the ablest Physicians and Surgeons, without Expence. This is an Encouragement, beyond what some other Nations give, as those, who are in the *French* King's Ships (if I am rightly informed) have their Pay stopped, when in the Hospital, or under Cure. — Nor is it a small additional Pleasure, to a Seaman in
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the Royal Navy, to reflect, that whatever Misfortunes, incident to his Way of Life, may befall him, in the Service of his Country, he will be honourably rewarded, and, under many Circumstances of but small Accident, obtain a Pension for Life.





A P P E N D I X.

HAVING had Occasion already
 to observe, that Blood-letting, by
 Way of Prevention from Diseases,
 on passing the Tropic of Cancer,
 was an usual Practice at Sea *, it may not be
 altogether foreign to the Purpose of this Essay,
 to subjoin a few general Remarks on that
 Operation, for the Benefit of those, who
 never practised in the Torrid Zone. The
 Observations may perhaps be found the more
 necessary, as inexperienced Practitioners are
 apt

* See Page 36.

apt to imagine the Principles they have been taught, relating to Diseases in *Europe*, may serve for invariable Rules of Practice, in all other Climates.

It was before observed, that a Transition, especially if quick, from cold to extreme hot Weather, generally induces a plethoric Disposition. The Signs are, a Pain and Giddiness of the Head, a Heaviness and Dullness of the Eyes; sometimes, the *Tunica Conjunctiva*, appears slightly inflamed, there is usually a Sense of Fullness and Weight in the Breast, the Pulse, feeling quick and oppressed. Some, at this Season, are seized with ardent Fevers; a few with Diarrhœas. In such Cases, plentiful Blood-letting is plainly indicated.

But the Case is quite different, after a longer Continuance of sultry Weather, and when the Constitution is in some Measure habituated to the hot Climate. For 'tis then observed, that the Symptoms of Topical Inflammations in the Bowels, even the most dangerous, are not near so severe in such Climates, as in
cold

cold Countries ; nor can the Patients bear so large Evacuations. The Practitioner, however, is not to be misled by the Mildness of the Symptoms ; for he will find, notwithstanding such deceitful Appearances, that the Inflammation makes a more rapid Progress in hot Countries, than in cold ; Suppurations and Mortifications being much more suddenly formed ; and that in general, all acute Distempers, come sooner to a Crisis, in the Southern than in colder Regions. Hence, it is an important Rule of Practice in those Climates, to seize the most early Opportunity in all threatening Inflammations, to make frequent, tho' not copious, Evacuations by Blood-letting. For, by Delay, the Inflammation swiftly passes from its first to its last or fatal Stage ; at least an imperfect Crisis in such inflammatory Fevers ensues, which fixes an Obstruction in the Parts or Viscera, extremely difficult to remove.

'Tis indeed, a general Maxim, with some of our *English* Practitioners, in the *West Indies*, that, in most acute Distempers, Bleeding in
that

that Country is prejudicial. This is founded upon a Supposition, that the *Craffamentum* of the Blood, is too much resolved, and the Solids, greatly weakened by the Heat of their Climate. So, say they, when a Fever is contracted, either from an Error in the Non-naturals, or by the epidemical Constitution of the Season, Bleeding in such a State of the Habit, by debilitating the Powers of Nature, withdraws that Strength from the Body, which is requisite to support the Patient, until the Crisis is accomplished. The Reasoning is partly just; yet, like a general Maxim, will admit of many Exceptions.

First, with regard to Sailors, it is to be remembered, that they are more exposed to quick Vicissitudes of Heat, Cold, Damps, and to various Changes of the Air and Weather, than most of the other Inhabitants in the Torrid Zone. Add to this, the Intemperance of Mariners, and the Excesses of every Kind which they are prone to fall into, whenever it is in their Power to commit them; all which, render them more liable to Inflammations,

tions, than any other Set of People. Hence their Diseases require more plentiful Evacuations, than the Land Inhabitants in those Parts of the World, and, generally, they bear them better.

This Rule also, as I before observed, does not take immediate Place in those, who are newly arrived in the Torrid Zone. The unaccustomed Heat, not only relaxes the Fibres, especially at the Surface of the Body, but is found greatly to expand the Blood, and the other Fluids. A Proof of which, is, that young Persons are often subject, upon their first Arrival, to a Hæmorrhage from the Nose.

But with Regard to the Natives, or those who have remained long in the Country, we grant the Usage of Bleeding them but sparingly, to be extremely applicable, making a small Allowance, for the different Seasons of the Year, the Temperature of the Air, and the Situation of the Places where they reside. Thus, in some Parts, even on the Island of *Jamaica*, and at particu-
lar

lar Seasons, the Weather is cool; wherefore in these Places, and at such Seasons, the Inhabitants (having their Fibres more rigid, and a more compacted Blood) bear much better the Loss of that vital Fluid.

A very different, and opposite Method to that of the *English*, is pursued by the *French*, but more especially by the *Spanish* and *Portuguese* Physicians in those Countries. The former, bleed too freely, and have Recourse to the Operation, in almost every acute Distemper; from whence leucophlegmatic and dropical Diseases, frequently ensue, the common and fatal Consequence of such Customs, and of profuse Evacuations in those Climates. The latter, not only follow indiscriminately the Example of the former, in this Particular, but are solicitous to contrive the most cooling Remedies for all Diseases, whether acute, chronical, or what are commonly termed nervous. Whereas, in many Distempers classed under the two latter Denominations, warm, aromatic, invigorating Remedies, ought, in sound Practice, to take Place, as much, if not more,
in

in warm, than in colder Regions : And such Medicines, are still more indispensably requisite in Weaknesses and Infirmary, succeeding acute Disorders.

In cold Countries, the State of the Air, greatly assists in restoring the impaired Spring of the Fibres ; whereas, every thing almost in warm Weather, such as Heat, Moisture, &c. concur to relax and weaken the Habit of Body. Thus, we may daily see Persons in *Britain*, after having suffered a most severe Fit of Illness, recover their Strength and Spirits, in a few Days ; and, in a very short Time, their natural Constitution. But the Case is very different, in the sultry Regions of the Torrid Zone, or indeed, in any Part of the World whatever, where the Heat of the Season, raises and sustains the Mercury, for a continued Time, at the 77th Degree and upwards of *Farenheit's* Thermometer. During such an Excess of Heat, Debility after Fevers is apt to remain with *European* Constitutions, for several Months. In *Jamaica*, the Convalescents are sent to the cool Summits of
the

the Mountains ; often a Retreat to a more Northern Climate, is absolutely needful, to recover their wonted Tone and Vigour of Body. It is an acknowledged Observation, that the *Negroes* and *Aborigines* in the Torrid Zone, cannot bear with too plentiful Evacuations by the Lancet. — They, commonly mix, the most stimulating, poignant Spices with their ordinary light Food, and this, is experimentally found suitable to their Constitutions.

If indeed we may be allowed to assume it as a Principle, which Observation does in many Instances verify, that, in all Countries, Providence has wisely ordered a Provision of the most proper Remedies for their peculiar and endemic Diseases, we cannot here but remark, that most Part of the native medicinal Productions of the *Indies*, are of the warm aromatic Species. Such as Ginger, Contrayerva, Guajac, Winters-Bark, Pepper of many Kinds, and Spices almost of every Sort, together with that grand Febrifuge, the Peruvian

vian Bark, the most powerful Strengtheners and Restorative of enfeebled, languid Constitutions, and the only Specific, yet known for the malignant Diseases of those Climates.

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